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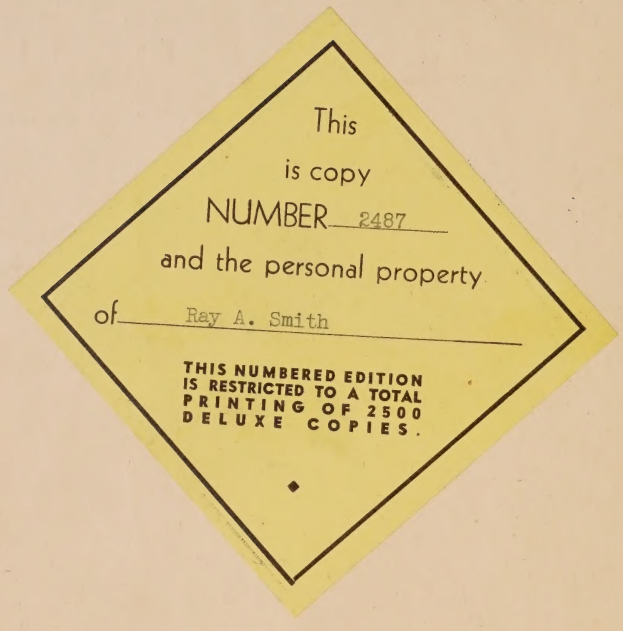
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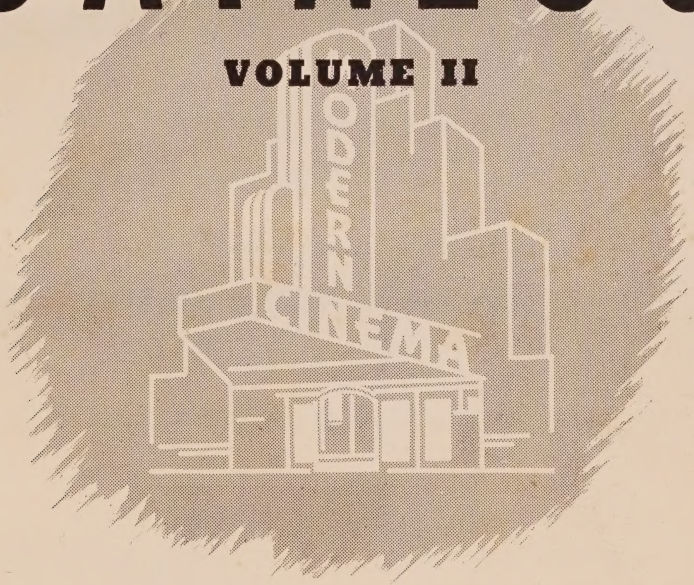

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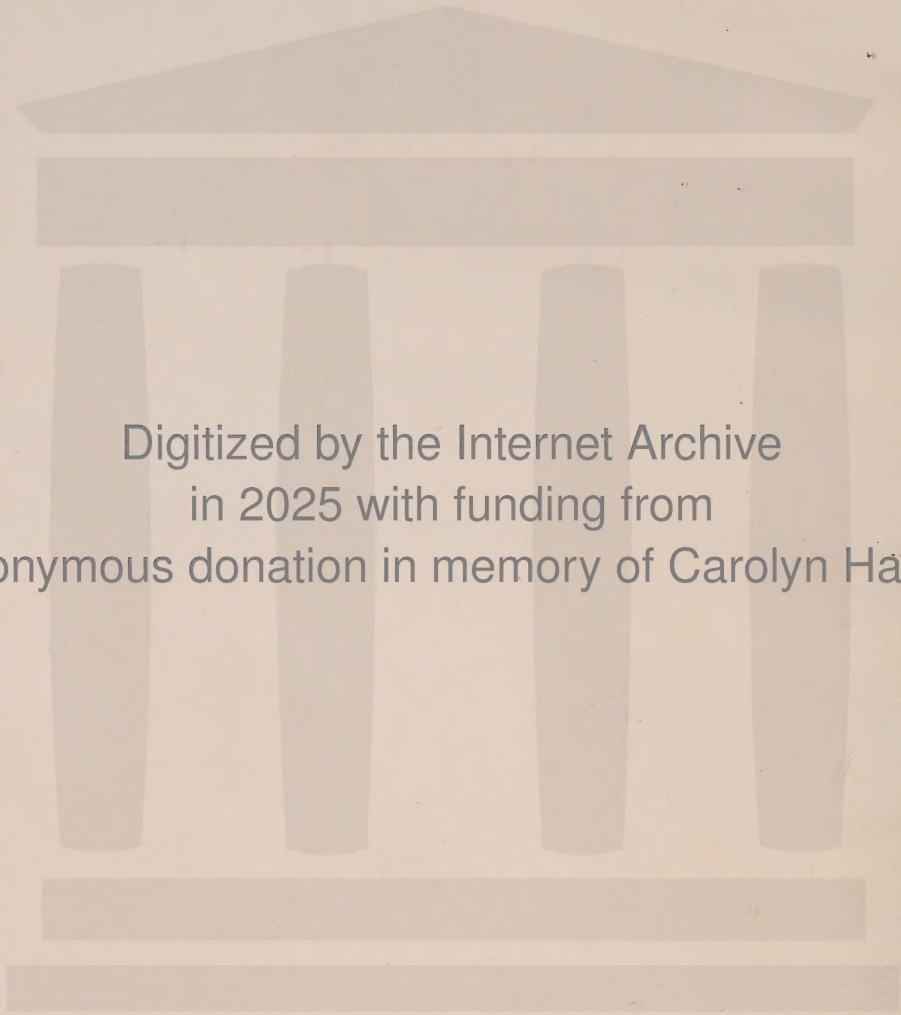

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The effort to lead—begets progress!

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VOLUME II

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THE ANNUAL REFERENCE MANUAL OF THE THEATRE INDUSTRY FOR THE EXECUTIVE BUYER, ARCHITECT AND DEALER

★

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THE NEW IN THEATRE DESIGN *(Section A)*

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A Brief Foreword

Sometime in the distant future a printer with the patience of a spinster, the genius of a Steinmetz, and the foresight of a Nostradamus, will invent a system by which a volume like this can be constantly going to press and still leave its editors the privilege of including all of the new ideas and suggestions that enter the thought arena from day to day. That will be a happy time, but deadlines now are deadlines—and printers are such practical people.

What follows, in the pages you are about to read, represents the second effort of the editors, effort that one year ago gave you the *first* pictorial compilation of construction and development in the physical theatre throughout the continent, effort that now gives you a similar pictorial compilation—plus factual essays, surveys, charts, and data that is certain to be of invaluable reference merit in the years to come.

From hundreds of industry contacts and from the nearly 3000 letters of comment and suggestion which resulted from Vol. 1, we learned the needs of this important equipment market and plotted the expansion of this current volume. One year from now, we hope to claim as much progress for Vol. 3 as we do for Vol. 2. No, we don't expect to change the name again, but even as the proof reader's pencil makes the final mark on these pages, new ideas continue to pour in from the editors, from readers, and from enthusiastic friends.

This is as it should be. We look upon ourselves only as the instruments of the men who have earned their right to be represented in THE THEATRE CATALOG, the craftsmen, the manufacturers, the technicians, who are so little publicized, yet are such valuable members of our great industry. They have directed our hand; we have only fashioned the volume. The inspiration has been, in a large part, theirs.

So then, please accept this as a foreword to Vol. 2. And as you look through its pages, we will be at work on Vol. 3. To all those who have helped, many thanks. To the countless theatre owners, architects, engineers, dealers, etc. who have assisted, to those who will be so eager to lend a hand in the preparation of the third edition, we give our appreciation in advance. To all others we hope you reserve space on your bookshelves (close to your finger-tips) for Vol. 3, and Vol. 4, and Vol. 5, and many more to come. In this way is being born the industry's *only* official, authentic, and useful cross-indexed text book of the design development, equipment improvement, economies and maintenance and management rules which will further the progress of the physical theatre.

There will be imitators of the idea and objectives of our annual service volume. No worthwhile periodical has ever been able to long retain exclusively to itself a worthwhile field. But until, and after, the mimics come, we promise to continue to develop and improve and to make of increasing value and constant service to you our annual volume, THE THEATRE CATALOG . . . . . THE EDITORS

The New in Theatre Design

SECTION A

Adapting Design to Locale

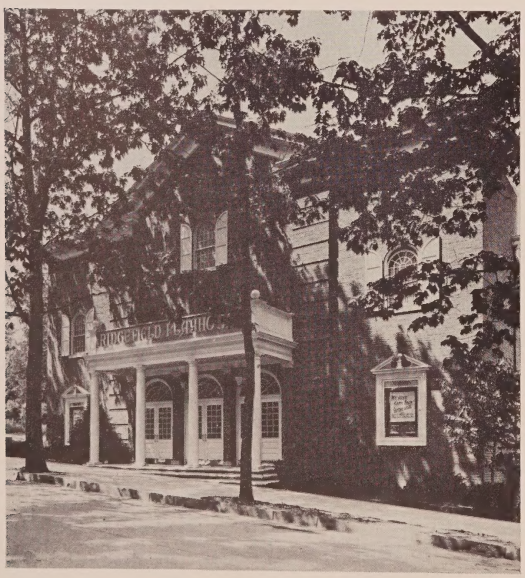
Combining the considerations of cost, neighborhood acceptance and longevity of the many plans and schemes that have theatre application.

BY JOHN EBERSON

THE question of whether theatre design should conform to controlling neighboring architecture in any given locality, or should adhere to the typical modern design representing attractive showmanship, is timely and indeed important. I feel that in residential communities and rural housing developments clustering around the larger commercial and industrial cities, it is, without exception, recommendable to have the facade, as well as the interior of the theatre, honestly and correctly related to the underlying architectural scheme of the particular community. It has been my pleasure to design a great many theatres in this spirit, and, in so doing, I experienced no difficulties in finding a scale for the particular period architecture to make shape, design, and ornamentation suitable for the theatre auditorium, as well as the foyers and retiring rooms. An example of such treatment is the new Ridgefield Theatre, Ridgefield, Conn., and another is the Livingston, N. J. Both of these houses have been built in Colonial style.

ON the other hand, I am called upon to design many small town theatres in older communities, where architectural unison and efforts were not wrapped up in zoning or other controlled measures. In these communities, and under these circumstances I build a theatre on "Main Street," with the object being to have its style dominate the mixed design of the old and more recent buildings around it. As far as the interior is concerned, I invariably adopt a colorful, warm, and friendly treatment in streamline and modern fashion. The "Main Street" theatre must have punch. It must immediately say to the passerby, "I am a theatre. Not a community house, not a library, not a 10-cent store. I am a theatre."

AS far as front lighting is concerned, it is well to consider the old, and true, adage that the moth is attracted to the flame. I try to capitalize every watt of light efficiently, avoiding pocketed bulbs in an effort to utilize the full brilliance of an exposed bulb lamp where needed. I try to create, regardless of the location of the theatre, an unusual "bright spot," covering the building as well as the sidewalks. In addition to this, I deem it of great importance to have the sign and marquee effects activated by flashers, creating a striking, eye-attracting effect.



THE PLAYHOUSE, RIDGEFIELD, CONN. is a perfect example of a theatre that conforms to its locale and patron wishes.

All of which reminds me of a very old, but very funny anecdote. I was building a few theatres in England, and had invited some of my clients to visit me in America and see the Gay White Way with its theatre signs in all their glory—such as only Broadway has to offer. I had previously recommended a large and lovely upright sign for one of the houses of our clients. While strolling down Broadway with my visitor, I asked him what he thought of this gorgeous theatrical and commercial electric display. "Well, sir," he said hesitatingly, "I think they are beautiful. But don't you think, sir, that your signs are a bit too conspicuous?"

I aim to make all my signs on theatres, big and small, as conspicuous as I possibly can.

COMPARING the cost of modern and period architecture, I should say that the modern theatre, as we interpret modern architecture (and by this I do not mean modernistic architecture), is the most economical. Period architecture, including Colonial, is slightly more expensive, due principally to certain ornamental details which call for specially scaled work, and the additional manual cost of their installation.

TODAY'S simple, streamlined theatres, emphasizing the optical and oral comfort of the patron, are generally economical to build.

In these streamlined houses, I feel that the only place in which "unaccustomed luxury" can be recommended is in the retiring rooms. Of course, in this respect, I am not referring to the big cities, but rather to the smaller communities where, in the modest homes of the average Americans, who are our best customers and the backbone of this nation, only modest sanitary conveniences have been provided. I believe I am applying a good bit of showmanship in urging exhibitors to be liberal with me in my appropriations covering the construction, finish, equipment, and furnishings of these retiring rooms. Men and women alike appreciate the spirit of quality and convenience expressed by sparkling tile-lined toilet rooms, chromium-plated multi-colored fittings and fixtures, the elegance of little powder rooms, ladies' retiring rooms, and men's smoking rooms.

AND now about the auditorium. For years, I have been anxious to find a client courageous enough to allow me to design an attractive exterior, an inviting brilliant lobby, commodious elegant retiring rooms with Roman splendor—and an auditorium in dead black, with a phantom floating screen, presenting in bold black and white the picture which the audience has come to see. My consideration for the safety and comfort of the public would naturally call for well-lighted aisles, an easy method of finding seats, and good exit facilities—but otherwise I would want to be left alone to create an auditorium where the audience could let its imagination wander as undulations of light and sound covered the reflecting screen before their eyes—where they could forget themselves and follow the thrills of the electrically reflected drama which the projector in the booth casts upon the screen.

But, for every auditorium, I insist upon good ventilation and proper proportions, where patrons can gather to enjoy the presentation of a shadow play. Also, there must be optical and oral conveniences, and all the comfort of seating, allowing the audience, in a warm and friendly atmosphere, to be placed in the proper frame of mind for the performance.

AND now, where am I going to put my theatre? That question covers a great deal of territory and entirely depends upon local conditions. Frankly speaking, I wish that theatre owners would more often ask that question of their architects. A good theatre in a small town need not be on the main street. People in small towns go to the theatre in their cars—they don't just drop in because it is close to the shopping center. Parking space is the important problem today. A theatre, even on the outskirts of town, no matter how big or small, if it has proper parking space, is better off than the crammed-in "Main Street" house, located between the 10-cent store and the popular department store. As a matter of fact, such crowded sites are detrimental to the successful operation of a theatre.

TODAY, a great deal of misinformation is being spread by certain trade magazines concerning the cost of building a theatre. This misinformation is causing havoc among builders, owners and architects. I admit that the sincerity of the trade magazines entitles them to absolution on the ground that these false cost reports are unwittingly accepted by the editors of these various magazines who naturally have no way of checking the truthfulness of the statements, and have often to combat with the ambition of an advertising contractor or a bragging owner. People today are mostly interested in what a certain theatre will cost, under certain specifications and certain conditions, and they don't want guesses. In one place we read about 700-seat theatre reputed to cost $28,000. How ridiculous! Upon closer inspection one will find that this is the cost of the foundation, the sidewalls, and the roof. Add to this all the mechanical trades, and furnishings, and one will have a real cost.

I have made available the actual figures resulting from competitive bidding on three types of theatres, covering the various building operations which have come in my charge recently. They should be of interest to all.

THEATRE No. 1

A Colonial house seating 640 in an eastern state, built under union conditions. Theatre uses well water, through coils, for cooling.

CONSTRUCTION	
Trucking, tool shed, office telephone	$300
Excavation, backfill, tank excavation	630
Concrete walls, footings, forms, piers, etc. Concrete slabs, beams, floors, sidewalk	6,609
Mason work	8,625
Structural steel	2,700
Ornamental iron work	600
Reinforcing steel (included in concrete estimate).	
Tile work	409
Sheet metal, roofing	1,316
Flush metal partitions	150
Kalamein work	235
Plain painting	300
Glass, glazing, mirrors	150
Plumbing, drainage (no hot water system)	2,400
Heating (including oil burner)	3,000
Ventilating, refrigeration	8,000
Electrical work	3,800
Lathing, furring, plastering	3,642
Hardware: Finish, $500; rough, $75	575
Dampproofing and caulking	180
Rough carpentry	750
Finish carpentry	2,845
Water	80
Gypsteel plank—labor	1,835
Watchman	225
Scaffold—interior	300
Cleaning, patching, removing rubbish	100
Supervision	1,440
	$51,196
Overhead, profit	4,704
Social Security, unemployment insurance, compensation insurance, public liability	1,100
Total	$57,000

EQUIPMENT	
Carpets, Ozite	$1,500
Chairs (theatre), 610 @ $7.00	4,270
Decorative painting	1,800
Directional, exit signs (included in fixtures).	
Display frames (included in general contract).	
Electric light fixtures	1,000
Electric signs, changeable letters	2,000
Fabrics: house drapes, main, other stage curtains, including Rockwool, wall coverings, curtains, etc.	2,800
Fire extinguishers, axes, etc.	50
Furniture: house, stage, office	250
Lockers	45
Picture booth equipment, motor generators, projectors, etc.; picture sheet, miscellaneous, sound	5,000
Rubber mats: 450 sq. ft.	650
Stage rigging (included in fabrics).	
Ticket boxes	75
Ticket machines	316
Coin machines	107
Vacuum cleaner	60
Total	$19,923

THEATRE No. 2

A theatre seating 1111 in an industrial town in the central states area built under union conditions. Theatre uses well water through coils for cooling.

CONSTRUCTION	
Compliance with all provisions of the "general conditions" and the duties of general contractor	$4,200
Excavating, grading	1,200
Footings, foundation walls	5,000
Plain, reinforced concrete construction	5,200
Furnishing, erection of structural steel and iron	6,800
Gypsum plank roof construction	2,350
Alternate poured gypsum roof construction	3,350
Roofing	900
Masonry	12,000
Carpentry, millwork	4,000
Ornamental, miscellaneous iron	2,300
Plain, ornamental plastering	3,000
Tile work	800
Porcelain enameled work	400
Sheet metal work	350
Metal toilet partitions, doors	225
Metal doors, frames	750
Hollow metal windows	225
Glass, glazing, mirrors	270
Plain painting	500
Steam heating system, ventilation, artesian well, plumbing and drainage system	19,000
Electric wiring	4,000
	$76,820
Contractor's profit	5,180
Total	$82,000

EQUIPMENT	
Opera chairs (1,111 @ $7.25)	$8,054.75
Booth equipment, sound equipment, box office equipment, portable electric equipment	3,200.00
Curtain—motor and track	220.00
Carpets, rubber mats	2,800.00
Decorative furniture	600.00
Decorating	2,500.00
Rock Wool, fabric, draperies	1,800.00
Hold out rails	150.00
Electric light fixtures	1,200.00
Sign, sign letters	2,000.00
Lamps	150.00
Total	$22,674.75

THEATRE No. 3

A house seating 809 people in an industrial city in the state of New York, built under union conditions. House uses air only for cooling.

CONSTRUCTION	
General conditions and duties of general contractor	$3,500
Excavating, grading	1,250
Footings, foundation walls	4,200
Plain, reinforced concrete construction, cement floors, sidewalks	4,090
Cement waterproofing	460
Furnishing structural steel, iron	4,850
Erection structural steel, iron	1,360
Poured gypsum roof construction	1,830
Roofing, sheet metal work	1,090
Ornamental, miscellaneous iron	1,000
Masonry	11,850
Carpentry, millwork	3,600
Plain, ornamental plastering	4,200
Metal toilet partitions, doors	140
Metal doors, frames	500
Tile work	1,200
Glass, glazing, mirrors	1,600
Plain painting	640
Steam heating system	2,900
Ventilation, summer cooling	7,200
Plumbing, drainage	2,000
Electric wiring	4,600
	$64,060
Contractor's profit	5,740
Total	$69,800

EQUIPMENT	
Carpets, Ozite	$1,500
Theatre chairs (809 @ $7.00)	5,663
Decorative painting	1,800
Directional, exit signs (included in fixtures).	
Display frames (included in general contract).	
Electric light fixtures	1,000
Electric signs, changeable letters	3,000
Fabrics: house drapes, main, other, stage curtains, including Rockwool, wall coverings, curtains, etc.	2,800
Fire extinguishers, axes, etc.	50
Furniture: house, stage, office	250
Lockers	45
Picture booth equipment, motor generators, projectors, etc. Picture sheet, miscellaneous, sound	5,000
Rubber mats, 450 sq. ft.	650
Stage rigging (included in fabrics).	
Ticket boxes	75
Ticket machines	316
Coin machines	107
Vacuum cleaner	60
Total	$22,316

Architect John Eberson is, at the present time, in charge of building operations in more than 19 states, and his work is also known in Paris, London, and Australia, where the large cities are dotted with examples of his work. Trained in Germany, Eberson has a style of his own—"Modern American"—which has been instrumental in the growth of the Eberson organization in the 38 years he has been at its head. At present the organization has offices in New York City, Chicago, Miami, and Houston. Eberson and his organization have theatres throughout this country and Europe to their credit, as well as Texas' tallest structure, the Niels Esperon building in Houston. In New York City, a staff of more than 20 people are kept busy preparing plans and specifications for Eberson projects, which cover not only design but also construction, mechanical trades, the structural design, and electrical work.

What the Future May Bring

In which a prominent West Coast architect discusses the progress and developments which may take place in years to come.

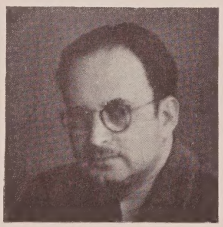
BY S. CHARLES LEE

THE actual design and planning of every building revolves upon the axis accepted by all students of architecture that form follows function. So, in trying to anticipate future form of the theatre, we must, of course, anticipate the functions making up its use.

AS near as we can anticipate at the present time, stage shows, with few exceptions, are almost a thing of the past. Some bright young mind may produce a new type of stage entertainment which would reverse the cycle and then we would have to redesign the theatre around this new type of entertainment. For example, if it were an audience participation entertainment, one can readily see the stage would be radically different from a platform where the audience does not leave its seats. So, without having a future entertainment in mind as being any different than the present day motion picture, let us analyze what we can expect of the future of the motion picture theatre.

IN most localities, the problem of arriving at the motion picture theatre by automobile is fast becoming acute. With the decentralization of business areas, the spotting of first run pictures in isolated spots, and the encouragement of private home ownership, it is becoming more necessary to arrive by machine. The theatre of tomorrow should, therefore, be designed so the patron practically drives into the lobby. If 90% of the people arrive by motor car, then 90% of the people should not be inconvenienced with a block long walk, auto parking complications, and getting wet in inclement weather.

We know that the American system is to provide the least effort along with the greatest attraction. The theatre of tomorrow will be devised so the patron will drive in with his car. It will be quickly taken from him, parked, and systematically returned when the patron leaves his seat. His arrival at the exit will be anticipated.



While maintaining a general practice of architecture, S. Charles Lee has of recent years been specializing to a great extent on the type of architecture used for amusement purposes and is recognized as one of America's outstanding authorities in the plan and design of motion picture theatres. He has written many articles on the technical requirements of the theatre and has been consulted by major exhibitors both here and abroad. Among the other outstanding commercial structures he has built are the Max Factor Cosmetic Plant and Association of Motion Picture Producers Building, and he numbers among his clients many personalities of international reputation. Born in Chicago, educated at Chicago's Art Institute and Armour Institute of Technology, he settled in Los Angeles in 1921. He has branches elsewhere. In the field of entertainment design he states that he planned the first motion picture theatre to be designed specifically for the presentation of talking pictures and later became an intensive student of the study of acoustics, originating many of the features now used in the better theatre designs to create most effective hearing of reproduced sound. In the planning of theatres he has also introduced, and has Patent Office protection on, numerous floor plans and details used in the construction of the modern theatre. International recognition has been given him by the Royal Institute of British Architects, which has entered his works in a permanent exhibit. Away from the business world he likes hunting, fishing, and golf, plays a snappy game of bridge, and owns and flies his own airplane, which he uses for routine intercity transportation, as others use their motor cars.

When the lobby is entered after leaving the car, psychologically, the entertainment must begin. Unless the theatre of the future is designed and built so as to stimulate a feeling of entertainment and the elimination of office and home worries, we will drive the patron from the theatre into other lines of relaxation. It is well to say that the people go only to see the picture, which is, of course, the moving factor in the entertainment world. However, there is a certain psychology to the surroundings of entertainment which cannot be calculated directly but which through experience of those in the entertainment world has been proven to be essential. The theatre goer must feel as though he is in a new world when he spends his money for entertainment.

THE exterior of the theatre of tomorrow will probably be more fantastic than the theatre of yesterday. Lights will play an important part in the decoration and the staid old architecture designed to last 100 years will be abandoned in favor of a more spectacular display that will be reshaped about every 15 years. This seems like a great expenditure or waste of money but due to the public's traveling extensively by automobile and air and due to the motion pictures' education, the public seems to be tiring of fixed motifs and the theatre building must take on a festive effect comparable to the mode of the times.

WHEN the doors open from the foyer, no light will strike across the screen, and no disturbance will be created for those sitting near the doors. When the auditorium is entered, the carpets will be brightly illuminated with black light of a quality that will not interfere with the illumination of the screen. The aisles will be as visible as daylight and comfortable to walk upon. Empty seats will be automatically located in the foyer by a simplified system before the patron walks into the auditorium. The theatre of tomorrow will solve the hat and coat problem much better than the theatre of yesterday, probably by building a seat that will have a compartment that will receive the hat and coat. Entering the auditorium from the foyer will in the future be a transition different than today.

When the patron finds his seat, it will be one of extreme luxury, probably built somewhat on the basis of a barber chair. This seat will be shifted into any desirable sitting position required by the individual person. By pressing a button you will be able to sit up straight, lean on one side, shift forward or back to obtain Morris chair comfort. Spacing between the chairs will be luxurious enough to have foot rests when desired. The sight line will be designed entirely new. Seats will be staggered and the elevation will be built as a bowl to give a perfect sight line from any seat tilted in any position. These comforts sound extravagant but we are not spending nearly as much per seat for the construction of theatres today as we did in the late 20's.

THE sound systems will probably be re-arranged in such a way that the sound will be heard more individually at each seat than over a mass of seats. It probably will be so selective that those with impaired hearing will be able to turn the volume up and those with sensitive ears will be able to turn it down.

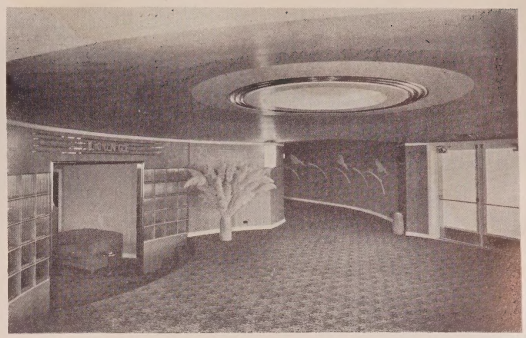
The acoustics of the theatre of tomorrow will be a variable item. The auditorium will be designed with changing acoustical arrangements. When live acoustics are required, the auditorium will turn live, and, consequently, can be deadened accordingly. When an intimate love scene is portrayed, the house will be toned to a delicate quiet. When war scenes are shown, the liveness will be increased to a reverbrating echo.

AIR conditioning and ventilation will also be on an individual basis. Patrons who are hot will be able to get cold air and vice versa. The ventilation will also be run through electric, chemical bacteria controlling chambers and germ-free air will be in the auditorium at all times. People will realize that they may go to a theatre and have less chance of catching a cold than being out in the open air.

No doubt the picture will be developed in the third dimension in color and lighting; will be perfected so that the illusion will be available from every seat. Fluorescent and black light types of illumination will be so developed that all the beauty built into the theatre will be enjoyed at the same time that the picture is being seen without one interfering with the other. The news will, of course, be carried instantly by television and news that arrives during the process of other entertainment; will be stored on film and released on the screen before the patron leaves the theatre.

SHOULD a stage type of production be developed that would meet the public's fancy, there, no doubt, would be required a new technique of presentation in order to compete with the picture technique. This would be accomplished by having a very rapidly changing stage and scenery arrangement where the stage sets will be completely set up on stage wagons of a flat car type resting on tracks that will move so rapidly this would merely require a black-out of the lights when the new scenes have re-appeared on the stage. Therefore, an actor could pass from one scene to another similarly to the method seen in motion pictures. If an actor is seen walking out of the inside of a door, he immediately re-appears on the outside of the building coming out through the same door.

At the conclusion of a performance, the sides of the theatre will revolve or open in sections and the auditorium will empty quickly, quietly and with no danger, the patron immediately stepping into his car, mindful of a comfort and service that no other entertainment has previously delivered.



THE THEATRE OF TOMORROW may be premeditated today in the airy, simple grandeur of this foyer in the Hopkins, Oakland, Calif. S. Charles Lee, architect.

Theatre Financing by R. F. C.

As told by Geo. B. Williams, President of the Board of Directors, R.F.C. Mortgage Company to Chas. Stofberg.

JUST how many exhibitors are acquainted with the facilities available at the RFC Mortgage Company for theatre construction we aren't certain of, but the organization set up by Uncle Sam in Washington is busy these days, and has been for quite some time. The eight-member board of the RFC Mortgage Company meets twice weekly in Washington to consider loans which in the past (for exhibitors) have ranged from as low as $2,000 to a high of $750,000.

Applications for first mortgage loans to the RFC, a 12-page affair, are sent to the Washington headquarters by the agents in the field with their recommendations. The RFC maintains 31 branches in various sections of the nation. George B. Williams, formerly of Chicago, heads the RFC Mortgage Company.

Williams, in a brief summary of the loans to exhibitors since March 19, 1935, when the company was organized stated as follows to The Theatre Catalog:

> "You may be interested in the news that we have made commitments to make loans on 179 theatre properties for refinancing and new construction, totaling slightly over $10,000,000. Of this amount, about $4,500,000 has been disbursed. Until five months ago, we had not had a single default nor a request for modification of repayment terms. At that time, we had one case in which a request for a deferment of payments was made because of poor summer business. As a class, we have at this time no better loans in our portfolio, and unless something unforeseen happens, they should continue to be so."

IMPORTANT factors considered by the board of directors, according to Williams are:

One—Value of the property.

Two—If theatre that has been operating, what are its earnings?

Three—Has the exhibitor been successful?

Four—Competition.

Five—Picture contracts. (If no contracts the exhibitor "can't get to first base").

One important thing to be remembered, when considering a request for a loan, is whether money is available from any other source.

Said Williams:

"We do not lend money when it is available from any other source. It must be remembered we are not in competition with loan companies. If the exhibitor does not like the other fellow's interest rates he can not use this as a factor in obtaining a loan from our company."

OF the 179 commitments for loans made by the RFC to exhibitors, 78 have been negotiated for construction of new houses. Most of the loans have been made to exhibitors of the east, Williams said. He stated that the company was proud there has not been a single default in any of the loans made to the exhibitor. Loans are made for a term of 10 years with a minimum of 50 per cent to be repaid in monthly installments during that period. Most of the $10,000,000 which the RFC has loaned to exhibitors has gone for refinancing when money has come due.

The following have been appointed agents of the RFC Mortgage Company in the territories covered by the loan agencies of the Reconstruction Finance Company as indicated below:

Agency	*Agents*	*Address*
Atlanta	M. E. Everett W. J. Davis	Healey Bldg., Atlanta, Ga. Send mail to P. O. Box 1553
Birmingham	E. W. Long Fred H. Foy	Comer Building, Birmingham, Alabama
Boston	John J. Hagerty George E. Larkin	40 Broad Street, Boston, Massachusetts
Charlotte	John A. Campbell, Jr. J. K. Wilson	Wilson Bldg., 109 W. 3rd St., Charlotte, North Carolina
Chicago	Frank M. Murchison Craig O. Black William F. Gregson *C. F. Mudgett	Federal Reserve Bank Bldg., 164 West Jackson Boulevard, Chicago, Illinois
Cleveland	J. A. Fraser M. C. Davies T. T. Perkins	Federal Reserve Bank Bldg., Cleveland, Ohio
Dallas	L. B. Glidden Powell D. Harris	Cotton Exchange Building, Dallas, Texas
Denver	Ross L. Hudson Stansbury Thompson	Boston Building, Denver, Colorado
Detroit	Raymond J. Hodgson Arthur J. Fushman James P. Cummiskey, Jr.	607 Shelby Street, Detroit, Michigan
Helena	Stuart A. Bingham Vermon W. Pomeroy	Power Block, Helena, Montana
Houston	M. McConnell W. I. Phillips	Rusk Bldg., 723 Main Street, Houston, Texas
Jacksonville	Fred H. Farwell John A. Newsom Sollace Mitchell	Western Union Building, Jacksonville, Florida
Kansas City	Frank Hodges F. G. McGuire	1014 Federal Res. Bank Bldg., Kansas City, Missouri

Little Rock	J. W. Jarrett J. H. Stanley	Pyramid Building, Little Rock, Arkansas
Los Angeles	Hector C. Haight Romaine L. Angell	Federal Bldg., 312 N. Spring St., Los Angeles, California
Louisville	J. Fort Abell Gerard B. Schroering	Lincoln Bank Bldg., 421 W. Market St., Louisville, Ky.
Minneapolis	China R. Clarke George C. Power	438 McKnight Building, Minneapolis, Minnesota
Nashville	J. M. Gardenhire Lee Davis	Nashville Trust Co. Bldg., Union St., Nashville, Tenn.
New Orleans	George W. Robertson Justin Green	Union Bldg., 837 Gravier St. New Orleans, Louisiana
New York	W. J. Farthing T. J. Ahearn, Jr. R. T. Wilson Thomas E. Parks	Federal Reserve Bank Building, 33 Liberty Street, New York, New York
Oklahoma City	J. C. Eagen R. D. Wilbor, Jr.	Federal Reserve Branch Bank Bldg., Oklahoma City, Okla.
Omaha	Herbert S. Daniel Alfred J. Eggers	Woodmen of the World Bldg. Omaha, Nebraska
Philadelphia	E. Raymond Scott Henry F. Walton, Jr.	Federal Reserve Bank Bldg., Philadelphia, Pennsylvania
Portland	William Kennedy Court M. Sargent	444 Pittock Block, Portland, Oregon
Richmond	Henry G. Gilmer E. W. Staples	Richmond Tr. Bldg., 7th and Main Sts., Richmond, Va.
St. Louis	John W. Snyder Frank J. Sain	Landreth Bldg., 320 N. Fourth St., St. Louis, Missouri
San Antonio	W. T. Montgomery Humbert J. Musa	520-523 Alamo National Bldg. San Antonio, Texas
San Francisco	John S. McCullough, Jr. H. F. Hossack	514 Federal Res. Bank Bldg., San Francisco, California
San Juan	Nelson Norregaard †Edward A. Ward	P. O. Box 4512, San Juan, Puerto Rico
Seattle	G. B. Grieve Richard M. Price	Dexter Horton Building, Seattle, Washington
Spokane	Walter Ferguson George S. Sylvester	Columbia Building, Spokane, Washington

*Appointment expired December 31, 1940.
†Acts only in the absence or disability of Nelson Norregaard.

RFC M. C. Form 6 (Revised 12-27-40)

M. C. File No. ..... Loan No. ..... Agency No. .....
Agency

THE RFC MORTGAGE COMPANY

MEMORANDUM OF LOAN AND RECOMMENDATION

Date .....

Location ..... (City) (State) (Address)

Amount of Loan, $..... Interest Rate .....%. Term of Mortgage ..... Years.

Name of Applicant .....

Address .....

Builder .....
Date of Completion .....
Remodeled? ..... What Date? .....

BUILDING DESCRIPTION

Use .....
Number of Stories ..... Type .....
Number of Elevators (Passenger) ..... (Service) .....
Number of Stores ..... Lofts ..... Apartments .....
Number of Rooms ..... Number Furnished .....
Number of Baths ..... Kitchens .....
Rentable Area: Gross ..... ; Net .....
Cubical Contents (in feet) .....

(Indicate Land Dimensions)

INCOME

Income (Itemize):	Estimated	Present
Total Gross Income		
Expenses:		
Taxes—Assessments $		
Vacancies	(.....%)	
Operation:		
Payroll		
Water		
Insurance		
Heat		
Light and Power		
Supplies		
Repairing and Decorating		
Advertising		
Agent's Commission		
Miscellaneous		
State Taxes		
Net Income Available for Interest		
Interest on Loan—1 year		
Net Income before Amortization		
Amortization .....%		
Net Return before Depreciation		
Depreciation .....%		
Net Return on Equity		

VALUE	Appraisal of	Appraisal of Loan Agency Appraiser	Recommendation of Agent
Land			
Building			
Total			
Loan			
Percentage of Loan	%		

(Original Appraisals to be Submitted Herewith)

U. S. GOVERNMENT PRINTING OFFICE 16—4858

MEMBERS of the board of directors of RFC Mortgage Company, which is a branch of the Federal Loan Agency are: George B. Williams, president; Howard J. Klossner, vice-president; M. J. McGrath, vice-president; James L. Dougherty, H. A. Mulligan, W. C. Costello, Sam H. Husbands, C. B. Merriam. Secretary to the board is Ronald H. Allen; assistant secretary is Dudley H. Diggs. George H. Hill, Jr., is general counsel and his assistant is Matthew A. McLaughlin, Jr. H. A. Mulligan is treasurer, Willard E. Unzicker, assistant treasurer.

THE application to the RFC Mortgage Company for first mortgage loan, to be executed and submitted in triplicate, asks the following information: data concerning applicant, property to be mortgaged, description of neighborhood, in whom title of property is vested, description of land to be mortgaged, and plan of property to be mortgaged. Questions are also asked concerning leasehold and condemnation proceedings. A full account of all liens and other encumbrances is requested, divided into two sections: taxes and assessments and mortgages and other liens.

A full itemization of the proposed use of the proceeds is the next information asked for, followed by a request for data concerning insurance on the property and on the applicant, and five lines for credit references. All services of appraisers, accountants, attorneys, and others in connection with the application in any manner, must be itemized, with names given and services described, in addition to the listing of the cost of these services. The application must be signed by all parties in whom title to the property is vested and the application, together with all required exhibits, should be fully and accurately completed on a typewriter, if available. Five exhibits are attached to the explanation, with three more necessary under certain conditions, and two not required but open to the exhibitor.

Exhibit A: Description of building.

Exhibit B: Statement of income and expense of property to be mortgaged.

Exhibit C: Financial statement.

Exhibit D: Information required in connection with application for commitment for mortgage loan upon completion of building. (Only necessary when proceeds of loan are used in whole or in part for major alterations, or for the construction of any improvements upon the premises. It should be carefully and accurately filled out and attached, together with complete plans and specifications, and the additional documents therein required.)

Exhibit E: Resolution of board of directors. (Only necessary in the event the applicant is a corporation.)

Exhibit F: Pro-Forma Balance Sheet.

Exhibit G: Copy of ground lease. (Only necessary in the event applicant proposes to mortgage a leasehold interest.)

Exhibit H: Applicant's statement of details in connection with refinancing of bond or certificate issue or reorganization. (Only necessary under certain conditions.)

Exhibits I and J: Provided for the inclusion of exhibits which are not required but which the applicant may desire to include in order to clarify the application or to furnish the company with additional information.

AN ANALYTICAL FORM summarizing all pertinent data from many other forms is here reproduced. From it the theatre owner may judge the nature of the information on which RFC Mortgage Company loans are predicated. There is little guesswork and no snap judgment permitted and even coldly analytical facts are carefully investigated by the field representatives before careful consideration by the Board of Directors.

Operating the Open Air Theatre

Differing widely from orthodox theatre construction and operation, here are the views of an executive who because of practical experience knows all about both.

BY LOUIS W. RICHMOND

MUCH has been said both for and against the open air theatre during the past four years. Few theatre men were impressed with their possibilities at the outset but, like mushrooms, they seemed to spring into existence everywhere, until today they are scattered throughout the nation, and, to all outward appearances, stand approved by the theatre-going public. Like the miniature golf courses which swept the nation of 12 years ago, the open air theatres began their existence. They were new, they carried an appeal, and like the "Tom Thumb" links they were given a one or two year lease on life. Motorists flocked to the "drivein" houses, and business increased. Staid conservatists, however, predicted an early downfall. Their forecasts were wrong.

YES, the drive-in theatre has caught on—even in unpredictable New England where the weather is as changeable as the chameleon, the "drive-ins" are flourishing, and the weather has nothing to do with it. Opening in April, the season extends through October, rain, fog, and even snow flurries have failed to keep movie goers from these open air houses.

The apparent success of the drive-in theatre lies in convenience, comfort, and privacy. In the confines of their own cars, patrons can talk above a whisper, rattle program, clear their throats, cough if they like, crunch peanut brittle, and eat peanuts in the shell without being shushed into cowering submission by the person in the adjoining seat. There is no need to dress for the theatre, and, therefore, the "open-airs" appeal to all classes.

Theatre goers were curious at first. Then the idea gained popularity, until today the "drive-ins" compare favorably, from a business standpoint, with some of the best of the smaller houses. Truly, their progress, to a point where they have been accepted by the business has been phenomenal. Four years ago, Elias M. Loew, one of the largest independent circuit owners in the East, opened his first open air theatre in Lynn, Mass. Today, he has six "drive-in" locations in Massachusetts, Rhode Island, Washington, D. C., Florida, and Maryland.

ATTRACTIVENESS is a by-word, a marquee more effective than all the neon lights on Broadway. Open air theatres, properly landscaped, create an atmosphere of cleanliness. The well kept grass plots, shrubs, and garden areas give the theatre a different appeal, and one which has brought results. Courtesy, efficient manipulation of traffic, and attention to the patrons' desires and wants are among a few of the reasons why the public returns with each change of programs.

AT the Loew theatres, when a car approaches the large front yard from the highway, the driver is greeted by a young man and a girl attendant, dressed in attractive uniforms. The young lady purchases the tickets, the young man wipes the windshield clean. From this point, the motorist is requested to extinguish his lights, and is guided by a flash-light equipped attendant and a system of signals to other ushers to the parking area.

From the time the car enters the theatre confines, an attendant is in constant contact with the operator. The ramps where the cars are parked are so constructed that patrons can see the screen from any location in the parking area. The entrance or departure of a car in no way bothers other patrons. At any time the patron desires to leave, he has merely to release his brakes, roll into the main aisle, and an attendant guides him through to a one-way road leading to the exit. Each theatre averages 10 ramps; that is, 10 rows stretching across the width of the theatre area, with car capacities varying from 500 to 800.

THE projection booth in the majority of drive-in theatres is situated approximately 220 feet from the screen, and the Loew theatres are using Simplex projectors with Hall Connolly High Intensity F-R 10 lamp houses. Contrary to the system used in the legitimate cinema, the light beam is thrown up to the screen, instead of down, and the booth is so located that it does not in any way interfere with the patron's vision. For sound, the E. M. Loew theatres are using special Western Electric and RCA systems, with 16-horn units. (The average theatre uses but four). Twelve of these horns are located above the projection screen, and four on the screen platform.

In order to synchronize the sound for the farthest ramps, the film is threaded under the lower projection head sprocket, a trick which coordinates the action of the film and the sound perfectly for all sections of the theatre. A decided new improvement for each and every car is the individual sound speakers which are attached to the patron's car as he enters, being affixed to the window glass with a rubber hook. The speakers are about the size of an ordinary auto radio speaker, and are equipped with volume regulators. They are plugged in from a system of wires and plugs located in the ramp bases. This new speaker eliminates the annoyance of sound which is often the cause of complaints by surrounding neighbors.

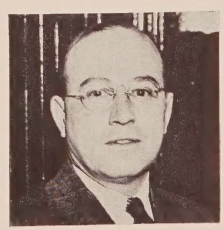
LIKE all theatres, the open-airs have their trials, tribulations, pathos, and humor. One family visited the E. M. Loew Lynn Drive-In far in advance of show time, purchased tickets, and drove to a ramp in the center of the areaway. There were six in all, and before the astounded eyes of the ushers, they proceeded to open nearly a dozen boiled live lobsters, and thoroughly enjoyed a literal banquet before the show began. Ushers reported that they were extremely careful, and wrapped the shells in papers and deposited them in a large kettle, from which they had taken the crustaceans, leaving not a trace of their banquet party to disturb the other patrons.

The "open-airs" are especially attractive to unfortunates and cripples who, to attend an ordinary theatre, must be bundled in and out of an ordinary house, oft times to be carried to waiting cars and taxis. This is unnecessary in the "drive-in" where the unfortunate never leaves the comfort of the car. Fred Snite, Jr., of iron lung fame, visits the open air theatre in Miami, Fla., where he has little or no difficulty in enjoying the programs.

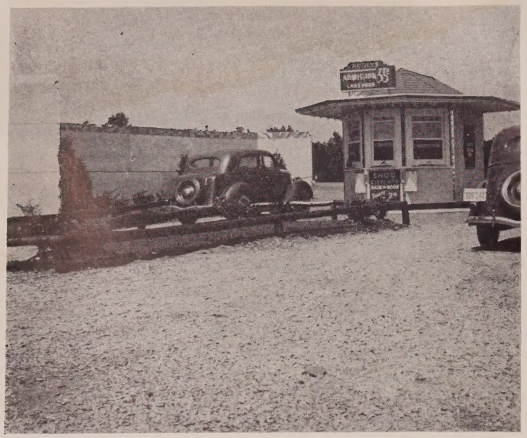
The majority of open air theatres are located in open areas, where there is a cool breeze, and, in many instances, are more comfortable than the regular theatre, air cooling system and all.

MANY have wondered what the procedure is on a rainy night, and whether or not the inclement weather affects the attendance. The answer is no. Within their cars, the patrons take no heed of rain or fog, and only the ushers are to be considered. Raincoats and rubbers, together with shelters at the ramps, are provided for the attendants. The average attendance figures show little change despite the weather, and all in all, fairly steady throughout the season.

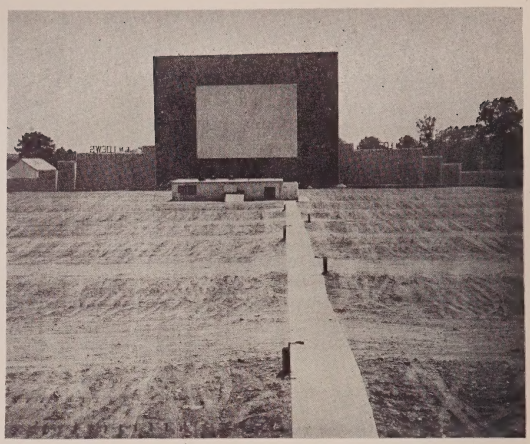
It is apparent that the open air theatre is here to stay, and what was at first thought to be a novelty is in reality a change from the usual indoor theatre to the outdoor, where the patron can enjoy screen entertainment with fresh air and comfort.



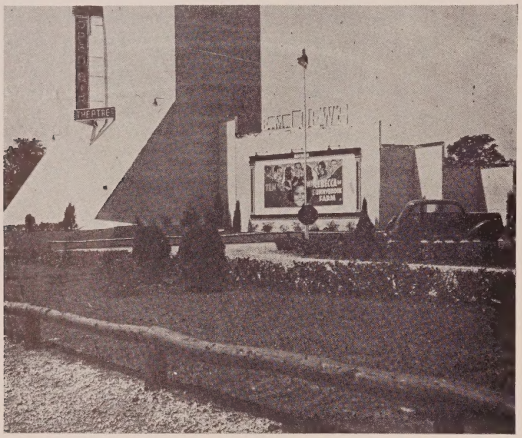
L. W. Richmond, whose article on open air theatres should cause plenty of exhibitors to think, started in show business about 21 years ago in Springfield, Mass., his birthplace. He was connected with the Winchester Amusement Company for seven years, resigning as general manager to take over the Bijou, there, on his own. Later, he acquired the Edgartown Playhouse, Martha's Vineyard, Mass. He started with the E. M. Loew organization 12 years ago and held positions as manager, district manager, field chief, and is now assistant to E. M. Loew, who operates 45 houses in New England, in addition to open air theatres in Florida, Maryland, Washington, D. C., Rhode Island, and Massachusetts.



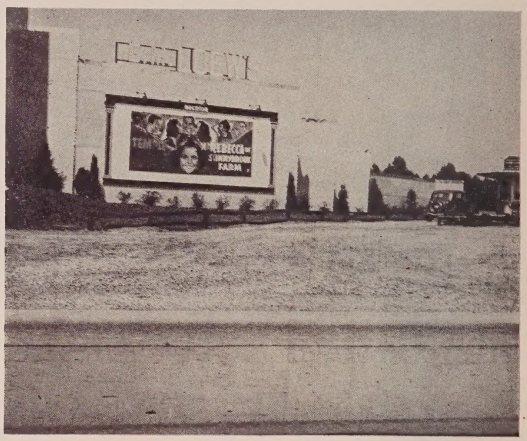
THE OUTER LOBBY of an open air theatre is made inviting and efficient. Rubber mats give way to a macadam road and brass rails to rustic garden fence. But if you think it isn't deluxe operation that admission sign reads "35c."



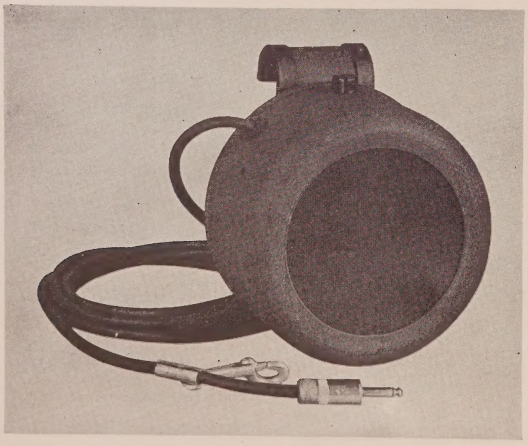
THE AUDITORIUM. Note the size of the picture sheet and the location of the projection room. Covered aisle lights mark the cement walk between ramps, which are the equivalent to aisle heads.



THE EXTERIOR presents a huge pylon that is certain to attract the attention of the passing motorists. 24 sheet boards sell the show while the landscaping, planting, and rustic effects make the prospect of an evening out of doors seem attractive. Careful attention is given to the exterior lighting so that it will not distract the patrons on the inside.



THE DRAWING AREA is dependent not on the number of people who live near by but on the amount of highway traffic that passes the entrance drive. Designed for the number of people who "take a drive" the objective of the open air theatre is to make them stop and spend a restful and enjoyable two hours.



THE LATEST IMPROVEMENT in open air theatre operation is the individual loud speaker designed by RCA for attachment to each individual car. A plug-in box is incorporated in the ramp and such speakers have particular application during inclement weather when car windows may be kept nearly closed without impairing the sound. In such installation no large speakers are used at the proscenium and each individual car controls its own volume.

An Analysis of Building Standards

A Mid-Western expert details the many rules and developments which experience has proven practical.

BY LEO YASSENOFF

THEATRE architecture, in order to be startling and spectacular, sometimes borders on the exotic and eccentric to such a degree that a design that seems to be the ultimate may, in reality, be a white elephant when the practical standards of durability and maintenance costs have been applied.

True, the theatre must have top excellence of appearance which literally compels prospective patrons to enter. Yet, once inside they must be treated to such brilliant eye appeal and luxurious comfort as to make them repeaters. The physical requirements for providing these prerequisites to profit must be so thought out that the theatre operation itself can proceed on a minimum-cost basis. Therefore, every single glamorous feature must follow these set rules: First, low initial cost; second, extreme durability; third, low maintenance cost, and fourth, low replacement cost.

Once the motion-picture industry survived because it was a novelty; once the industry survived because the palaces of the 20's, in all their splendor and magnificence, invited a following who obtained pleasure from such exposure. With depression economy, the pomp and grandeur of more prosperous times were neglected. Theatres became dingy, unattractive and out of date. Simultaneously, grandeur-inspired patronage fell off. And not until during the past five years have some exhibitors, who are likewise showmen, awakened to the important fact: The physical glamour of the theatre is almost as important as the quality and glamour of the picture on the screen!

THE modern theatre should not be simply a place for the exhibition of emotional themes. Instead, the theatre of today should show such progress in design, in construction, in equipment, as to be remembered as the forerunner of new styles in architecture to be applied tomorrow to all progressive businesses. There is no place in the modern theatre for mediocrity; the public expects—the public demands, that a showhouse live up to its name. The theatre of today must be the last word in contemporary design, well proportioned with fresh details, features, materials, and colors. Obviously this is a place for specialists: Designers, architects, builders, all experts in the construction field, all with a complete understanding of show business.

THE first thing the man-on-the-street sees of a theatre is the front elevation, his focusing point being the marquee. Here is where showmanship begins. The front must have a magnetic personality, imposing to the nth degree. Height of this elevation, at the very minimum, should be equal to the top of the auditorium. If an arcade entrance is necessary, then a false front of at least two stories should be erected. Only with height can an imposing effect be achieved.

In the theatre of today a marquee is regarded as essential. Its original function as a protection against the elements has been eclipsed by the marquee's importance as an advertising medium. The marquee, as an integral part of the front elevation, should be considered as such and designed with that thought in mind—never added as an afterthought. Previously, all marquees were invariably rectangular in shape, but now with the sudden vogue for unusual attraction boards and special lighting, marquees have become curved, triangular or even trapezoidal in shape. Dimensions of attraction boards should definitely be as recommended by sign experts, but their general architectural design must follow along with the design of the facade.

MATERIALS available for the facade or front elevation of the theatre are of three classes: masonry, metal facings, and glass. Under the masonry classification we have:

A. Face brick
B. Bedford or similar cut stone
C. Glazed block and terra cotta
D. Marble
E. Stucco

FACE bricks, carefully and neatly laid up with colored mortars, are still probably the most acceptable type of masonry from a first cost standpoint, as well as from durability and maintenance considerations. Normally, face brick is less glamorous than other materials, but can readily be adapted for a place in any good design. Bedford, or similar stone blocks, make a substantial and dignified appearance, very acceptable structurally inasmuch as it becomes an integral part of the wall. The blocks are a trifle cold in aspect. Another difficulty presents itself in the matter of almost yearly steam cleaning or sandblasting to keep clean and bright. Glazed blocks, which represent a small brick size from 5″ x 8″ and 5″ x 12″ up to 8″ x 16″, are very desirable units, but are really not large enough to give architectural character to the theatre facade.

TERRA COTTA, on the other hand, may be purchased in larger pieces, varying shapes, and in a greater variety of colors; and are, therefore, excellent mediums for novel and sensational effects. Marble facings are the most expensive of the masonry finishes. They do give a rich appearance commensurate with the cost.

STUCCO is a flexible material for various curved surfaces, high towers and other frequently desired architectural results. Quite successful use of this material is made in Florida, California, and southern Texas. Because of freezing and thawing, and the consequent deterioration which follows, the use of stucco on light frame work is limited to semi-tropical climates. In the middle temperate zones, where extremes in temperature are frequent, the use of stucco may end in complete failure.

METAL facings, as a whole, are much easier to handle than masonry, can be made into a wider variety of trick designs, and come in many more colors. Their value is debatable in the question, appearance vs. durability. Porcelain is subject to spawling and chipping. Stainless steel cannot be used in the vicinity of industrial plants throwing a small percentage of sulphuric acid into the air (blast furnaces, cement burners, and the like).

If metal facings are considered essential, then most satisfactory is the macotta type which consists of porcelain or stainless steel pans backed or filled with light aggregate concrete. These are the only metal facing really impregnable to deterioration from water. Macotta and similarly manufactured products become an actual part of the structure; other metal facings do not, consequently, water, by either force of driving rain or capillary attraction, seeps between the facing and wall. Over a period of time, deterioration and oxidation or rust sets in.

STRUCTURAL GLASS despite the name, is of no structural value. Glass is easy to clean, is definitely modern in spirit. It is applied with a plastic cement, frequently held in place addition-

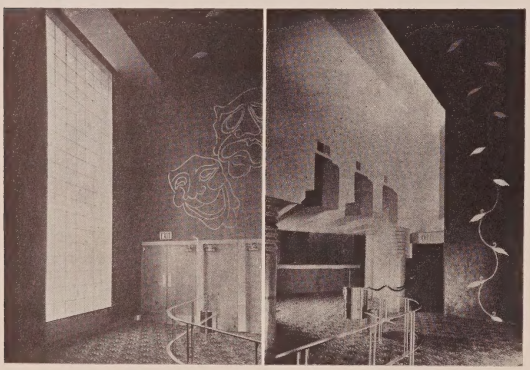
ATTENTION ATTRACTING FRONTS on even relatively small theatres can be acquired by building up the facia to a greater height than any surrounding structures. Illustrated above are the Sunset, Cincinnati, Ohio, and the 4 Star Dixie Theatre, Fort Mitchell, Ky. Both structures designed and built by F and Y Building Service.

ally by use of light angles. However, this type of glass may develop into a hazard. Seeping moisture, freezing as changes in temperature takes place, causes the glass to break away from its base. The realization of this possible danger makes structural glass advisable on exteriors below the marquees and for interiors only. To overcome this objection, and at the same time provide a unit that can be made an integral part of the wall, glass manufacturers are promoting the use of a product which consists of a light aggregate concrete biscuit with a slab of structural glass applied by pressure.

GLASS BRICK is much more substantial than structural glass. American companies, the writer believes, are at present making only plain clear brick; fancy colors and shapes come from abroad. Advantages of the latter are partially offset by a scarcity of product and increased prices due to the war. Glass brick is translucent, but not transparent, which adapts them for fenestrations in foyers and rest rooms. On the facade, unusual designs are accomplished with ease, and novel effects achieved by illuminating brick panels from below or behind. A particularly imposing interior use is in ceiling-to-floor windows in the foyer.

THE lobby—generally speaking, the space between the first and second set of doors in a theatre—varies in size according to the functions it has to perform. From a practical point of view, the lobby is as wide as the door space, but the depth is determined by several factors, the size of the lot available, the presence of storerooms on either or both sides, and the problem of toilets and restrooms on the same floor. Floors in the lobby spaces should be covered with easily cleanable tile, terrazzo, or cement with cove bases of similar materials. There should be recesses for rubber mats, of the link or perforated flat variety, so as to reduce the amount of dirt carried into the auditorium.

Ceiling of the lobby should have immediate colorful interest with plaster molds or indirect light troughs. The walls should consist of a wainscot easily cleaned, such as is provided by glazed tile, marble, or washable leather, or similar products; above the wainscot walls may well be plaster painted with washable paints. Illuminated wall cases for coming attractions are a necessary part of any lobby decorating scheme. Lighting, from either fixtures or indirect troughs, should strike a medium between the outside illumination and that inside the auditorium, gradually decreasing from the lobby on in to prevent eye strain from sudden changes. The carpet in the foyer should harmonize with the general interior plan of decoration.



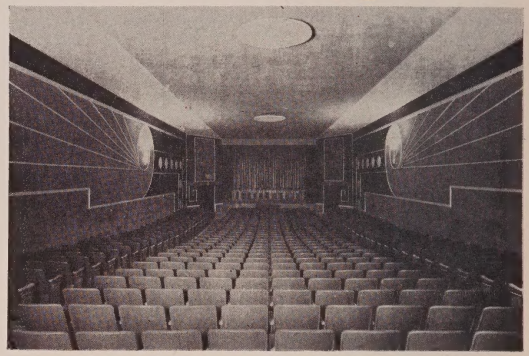
ENTRANCE FOYERS can be impressive and highly decorative. Lighting can perform an important function if well screened from the auditorium proper. Illustrated is the attractive and different foyer of the Sunset Theatre, Cincinnati, Ohio.

STANDEE space should be so constructed that the standing patrons can actually see the show, because a proper standee space can provide a sweet source of revenue. Glamour here should be emphasized by metal or glass trim of ornamental design. An upholstered front side is not out of question, the material naturally being washable. Lighted glass brick, concealed neon lighting, and fluorescent paint activated by ultra-violet or black light will make the standee rail glamorous.

Carpeting of the lounges should be an extension of the floor covering in the foyer and auditorium. Walls and ceilings are best in colored plaster. A great variety of furniture is available, both metal and wood, highly attractive yet durable. The lounges should be subdued in tone, but friendly.

UNCLEANLINESS in the restrooms has a psychological effect which can easily counteract a spotless appearance in the other portions of the theatre. If the number one requisite is a clean appearance, the number two is the ease in which the rooms can be cleaned. For the floors, there can be had terrazzo, ceramic tile, inlaid linoleum, and rubber. Walls can be glazed tile, glass, glazed brick, or porcelain. Manufacturers of plumbing fixtures carry matching units for almost any decoration plan if the budget will allow the expenditure.

IN the auditorium, the patron is either comfortable or uncomfortable; the image on the screen is clear or causes eye strain; the sound is good or bad. To see that the patron is always at ease is a problem of design. Hence the functional purpose of the decoration of walls and ceilings in the foyer and auditorium is to serve the comfort of the patrons. The planning of the interior walls and ceiling treatments of the auditorium must take into



AN INTERESTING WALL TREATMENT develops from the use of fabric over rock wool and highlighted with painted mouldings in this view of the Westmore Theatre, Huntington, West Virginia. Designed and built by F and Y Building Service.

consideration, and become a part of, the general lighting scheme, the air movement, the ventilating systems, the acoustical requirements, the sightlines, and the location of exits.

An auditorium too long or too wide will result in poor seats in certain sections of the theatre. The most economical theatre to build has an auditorium 40 feet wide with two aisles, seating up to 500. Generally speaking, a two-aisle house fits itself very well into a 60-foot lot. It will give two adequate aisles, a center section of 14 seats and two wall sections of seven seats each. By some laws the seat arrangement in a two-aisle house must not be over 7-14-7, or in some states, 7-13-7. Maximum number of seats on one floor with two aisles seems to be about 1000; a four-aisle theatre should be approximately 80 feet wide, with seating arrangements possible up to 1800. A three-aisle house is objectionable to the writer because the center aisle splits the best seats in the theatre.

MANY materials are available for treating auditorium ceilings and walls: Plaster, cloth products, leather or imitation leather, composition boards, weatherboard, acoustical felts. In every instance the material used must serve its purpose as part of the general design, yet at the same time performing as an acoustical agent. From a practical viewpoint, plastered ceilings are the best in the long run, being the most acceptable, structurally speaking. For walls, however, there is the added expense involved because the plaster must be painted or otherwise decorated in some manner to gain ornamental values.

Everything considered, the use of cloth on the walls is the most economical, at the same time possessing maximum flexibility. Cloth will last approximately five years, but replacement in its entirety is a comparatively simple job, costing but little more than a first-class repair order necessary on other types of walls after that length of time.

There has been a great trend in recent years towards the use of wall boards and composition board on the ceilings and walls of theatres. These various boards available on the market have varying acoustical qualities.

Showmanship, beginning with the marquee, must continue unabated in the auditorium. The auditorium must have glamour, color, and elegance without going beyond the limits of good taste. Variations in color of light and intensity should change slowly

without undue shock to the patrons. The effect at all times must be soothing. Decorations should take into consideration civic, industrial or historical backgrounds of the community. The designs, properly executed, should make the moviegoer's head and heart glow with pleasure and pride. Oil painted or photographic murals are an excellent medium for expressing these backgrounds in all their glory. An excellent example of the decorating scheme doing double duty is the use of college colors and collegiate murals in a theatre catering to the undergraduate trade.

LIGHTING can come from fixtures, concealed offsets on the sides or suspended troughs. Source may be neon, incandescent lamps, or fluorescent tubes. By use of rheostats in the booth, the entire lighting can vary in hues, or change completely. Latest innovation is the use of canned or dark light. This type of ultra-violet light is being adapted for aisle illumination, and at present is being used to obtain novel and unusual effects in murals on the walls.

In order to find a use for the seldom utilized space necessary to develop a two story or higher elevation for an imposing front, our engineers, after considerable study, came to the conclusion that the proper place for the mechanical equipment was on the second story of the entrance portions of the theatre. Above the lobby and toilet rooms the space had been but rarely used to its fullest extent. Ample space for the boiler, cooling coils, fans, compressors, and the other necessary mechanical equipment can be provided in this area. For some reason, not entirely clear to the writer, it was found that costly basements under the stages had been excavated in the past to house the mechanical equipment, apparently because of a precedent established for no logical gain.

Proper location of mechanical equipment, as effected by our engineers, has resulted in concentrating all of the electrical work in one general location. This is possible because the chief electrical load outside of the mechanical equipment is from the booth, the marquee and the sign. In view of the almost constant operation, it is recommended that nationally known mechanical equipment be used. A slightly higher initial investment saves in both maintenance and replacements.

Every theatre should have a complete cooling and air filtering system. Well water of approximately 54 or 55 degrees, available in proper quantities, is sufficient in itself for a cooling job. Most desirable is a system which feeds the conditioned air at a low velocity through auditorium ceiling grilles. Our engineers have found that the location of the air conditioning equipment in a general way adjacent to the booth, with liberal air delivery vents in the ceiling, plus return air tunnels under the floor, insures even distribution from the ceiling to all desired points in the auditorium. Even the problem of heating the low portions of the auditorium near the stage is simplified.

Use of a gas burning boiler, preferably hot water properly controlled by a thermostat, is recommended. Average costs of gas, for such hot water heat in our theatres, have ranged from $175 per season for 500-seat houses to not more than $300 for a 1000-seat house where natural gas has been available.

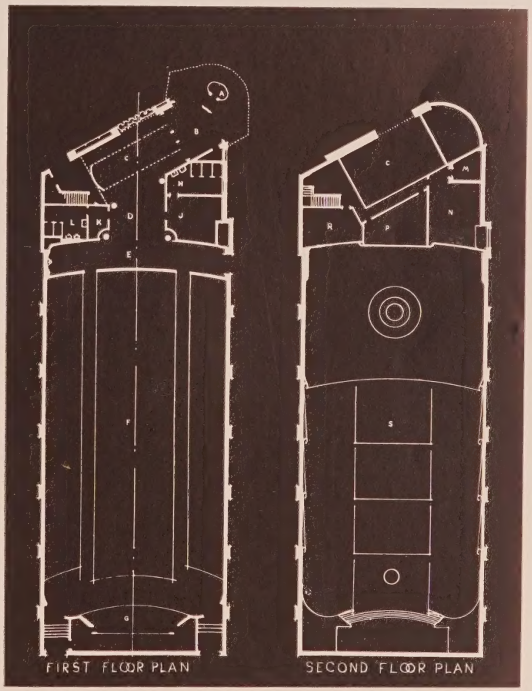
THEATRES should be constructed to last a lifetime. This can be accomplished by observing the fundamentals of building. Concrete footings are absolutely essential. In my opinion solid masonry walls are far superior to cement or tile block. Experience has shown a three-thickness masonry wall, employing block and tile or other backup material, the most satisfactory and lasting. Four-inch rockwool, or similar insulating materials, over the entire ceiling area are necessary to keep air conditioning and heating expenses down. Built-up roofs probably will last 10 years, but, as a matter of safety, repitching every five years is a guarantee that the roof will last as long as the building itself. Waterproofing and calking every outside joint will prevent future trouble from the weather.

Theatre building is perhaps the most complex type of construction. Building for tomorrow as well as today means the builder cannot trust past experiences altogether; he must have the foresight of seeing into the future. Where several different theatres in the same locale play a picture day and date, it is the theatre with a character all of its own, a theatre with pulling power by virtue of unusual display, novel materials and lighting effects, PLUS patron comfort, that gets the business.

NEIGHBORHOOD theatres are the theatres of the future, in my opinion. They will have all the smartness and comfort of the present first runs, differing only in seating capacities. There is no doubt but that the 750- to 1250-seat house has a greater proportion of excellent seats than any other size theatre. Profits depend, and will continue to depend, a great deal upon keeping the initial capital outlay down and holding maintenance costs as low as possible without curtailing service and class operation. Yet, in face of financial limitations, these theatres must embody the stability and permanence of huge industrial buildings and well constructed retail stores.

Competition is becoming keener and keener in the exhibition field. Sooner or later, the exhibitor who cannot afford glamour, decorative interest, improved sanitation, air conditioning, better seating, approved sightlines, acceptable acoustics, and proper patron service must fall by the wayside.

Leo Yassenoff, a graduate of Ohio State University, Class of 1916, is proprietor of the F. and Y. Building Service, Columbus, Ohio. While in college and during the first year on his own, he was interested in the fourth estate. In 1917, he entered the construction field, organizing the F. and Y. company, of which he has been sole owner since 1928. First theatre, the Arlington, Columbus, Ohio, was built for C. A. MacDonald in 1935. The second, the Westmont, also a MacDonald house, was constructed two years later. Publication of details pertaining to the Westmont brought many interested, although unexpected, inquiries from prospective theatre builders. Net result: The F. and Y. Theatre Division is now one of the outstanding organizations in the country, furnishing a complete design and erection service which embodies the services of registered architects and engineers, all phases of the actual construction, except seats, sound, screen, projection and booth equipment, and carpet. At the present time the company is building its 37th theatre job since April 1, 1937, slightly less than four years ago.



A—Ticket Booth B—Lobby C—Two-story Foyer D—Standee Entry E—Standee Area F—Auditorium G—Screen Platform H—Ladies' Toilet J—Ladies' Lounge K—Men's Entry L—Men's Toilet M—Boiler Room N—Heating and Ventilating Room P—Projection Room R—Office S—Reflected Auditorium Ceiling Plan

This actual example of an F and Y Building Service designed theatre, actually illustrates the position of the boiler room and air conditioning rooms on the second floor. Greater details will be found in Mr. Yassenoff's article.

Designing for Utility and Maintenance

The ability of the management to keep a theatre fresh and neat over a period of years is a reflection of the architect's plans and choice of materials.

BY DAVID SUPOWITZ

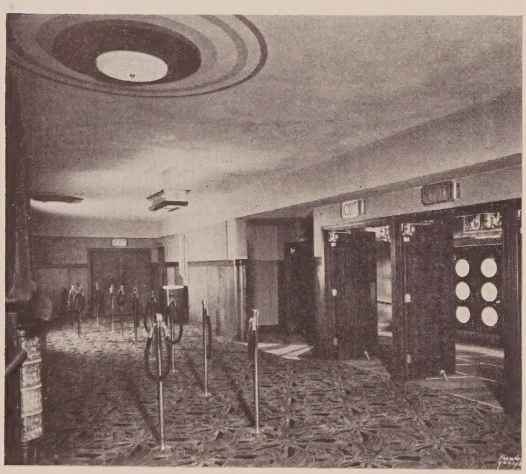
THE architect, when commissioned to design a theatre, is confronted with a series of problems. A theatre owner demands a building which combines patron appeal with practical utility and the architect must remember that a structural change in a theatre after it has been completed is not only expensive but may also cause the loss of valuable operating time.

In writing of the practical and utility side of the theatre structure, it may be advisable at this point to discuss various parts of the theatre structure, and explain why certain parts or materials are most useful and their embodiment becomes common practice.

THE exterior of a theatre building (exclusive of the front, which is given more study) is usually a problem which involves cost. It is the architect's duty to select a material, usually brick, which will be pleasing to the eye, react favorably to all weather, and does not exceed in cost the figure set forth in the budget. The front of the theatre building must be given much more study and attention in view of the potential box office appeal which it possesses.

New materials, so numerous today and constantly increasing in number, impose on the architect the necessity of being very careful in his selection in order to be certain that advantages attained are not alone in appeal but also in practicability. Among the ever-increasing number of materials that are used for a theatre front are plain brick, (colored) enameled brick, structural glass, porcelained enamel, cast stone, etc. Locale is also often a deciding factor in the selection of a material.

THE structural framework of buildings in most cases today, is steel. It is certain that no one questions the use of steel for structural purposes but methods for its utilization have, at times, become varied. More specifically, the construction of roof structure has been attempted in many ways. Each job, of course, presents a different problem and must be treated accordingly. Some designers are advocates of the use of beams and others are of the opinion that trusses are most practical. There is no doubt that, in some cases, each has advantages, the beam being most practical in houses of small widths. In most cases, however, well-designed trusses have proven most satisfactory. Air-Conditioning having become almost a necessity in the theatre of today, the truss affords valuable loft space for ducts and electrical conduits.



MAINTENANCE FACILITY and ease in cleaning is enjoyed by the Rialto Theatre, Pleasantville, New Jersey. David Supowitz, architect. Warner Brothers Circuit, owners.

A larger loft, which is the result of the use of trusses, is also a factor in maintaining proper temperature in the theatre.

The architect must keep in mind that after he is completely finished drawing plans and supervising construction, the management must have a theatre which lends itself to simplified management. Maintenance expense must also be held to a minimum to insure profitable operation.

NOW let us examine the interior of the modern theatre. The entrance doors, due to hard usage, have often been a source of trouble and annoyance to the theatre manager. Experience has manifested the fact that properly made metal doors are able to absorb much more wear and entail less expenditure for maintenance than wood doors. Wood doors, however, properly built of plywood in the mill have, in most cases, been found to be satisfactory. When cost is involved, wood doors are usually selected, due to the lower initial expense.

As we walk through the lobby let us pause for a moment and examine the floor. If the theatre is up to date, we are walking on a rubber mat and with good reason. It serves many purposes and it has been found to be false economy to substitute another material. In most cases, the lobby is ramped and to have a material underfoot which is not "skid-proof" (and this is often the case) is merely leaving the theatre owner open to law-suits which would result from slipping. Another important factor in having a rubber mat in the lobby is the fact that most of the dirt which the patron tracks in with him is left on the mat and is not transferred to the theatre proper where it would be much harder to remove. The most practical way to install a rubber mat is in sections of not more than 25 square feet, with metal strips dividing the sections. This is done to assure easy handling for cleaning purposes.

IN the theatre proper we find, in many old theatres, a glaring example of false economy. In making surveys of old houses, the architect usually finds wood floors which are invariably in bad condition. There is no doubt that the use of wood is cheaper than concrete, but it is not more economical. The management always finds it more difficult to keep a wood floor clean and after some time it becomes very unattractive. There is also the problem of loose boards, which results in constant maintenance expense. Seats installed in concrete are much more permanent and are not apt to pry loose from their bases, which might be the case with a wood floor.

The interior wall surface of the theatre today must be sound absorbent. This does not necessarily limit the use of various materials. There are numerous plasters and compositions which have been found to be satisfactory. In some cases, a decorative damask or fabric is used to avoid the necessity of painting the wall.

KEEPING the theatre clean and attractive is always foremost in the mind of an owner. Due to this fact, and because it enhances the beauty of the theatre, most architects install wainscots which will withstand constant scratching and rubbing when patrons (for the most part children) walk up and down the side aisles or sit against it. In this case, wood lends itself to repainting or refinishing without too much expense.

Again the ever-present subject of cleanliness comes up when discussing the ladies' and men's rooms of the motion picture theatre A glazed surface material, (usually tile is used in the toilet rooms for wall surface) and a floor of ceramic tile proves most suitable. Because of smoking in the ante rooms, it is a very bad policy to place carpets in these rooms. A colored tile or cement floor is both attractive and practical.

THE roof of the theatre building is ofttimes the cause of much concern to the theatre owner. Hence it is understood why the architect spends no little time in designing the roof and selecting the most suitable material. Wood, concrete, and gypsum are the materials probably most considered for the roof.

Gypsum, for those who are unfamiliar with the term, is a mineral substance which has many uses. The forms in which it comes for roof construction are bulk and slab. This fire-proof

material is light in weight and has great strength. Both the poured gypsum (bulk) and the precast slab have been used with success and the roof problems of a theatre owner, in most cases, will disappear with the installation of a gypsum roof. The built-up slag roofing and proper flashing at the walls complete the theatre roof which, with proper drainage and the ordinary amount of care, should prove most satisfactory.

WHEN designing a theatre, the architect always keeps in mind the efficiency of the layout. Will the patrons have all the comforts and conveniences possible with least amount of effort? Will the manager have immediate access to the theatre from his office? Have provisions been made to clean all parts of the theatre without undue work?

Men's and ladies' rest rooms are often placed on the mezzanine floor of the theatre. Experience has proven, from a theatre operator's viewpoint, that this is not always the best policy. This tends to have the patron remain longer than necessary and allows groups to go in places not overseen by the ushers or managers. Wherever possible, it has been found most practical to place rest rooms on the first floor. The location of the manager's office is also on the auditorium floor, for quick accessibility to the auditorium.

Conspicuous by their absence in many theatres are proper facilities for storage. It is an absolute necessity in the modern theatre to provide space for the countless items which are necessary to proper operation of the motion picture theatre. More specifically, items such as ladders, brooms, cleaning paraphernalia, and marquee letters should have their proper storage places in locations which afford easy access and yet do not interfere with space in the theatre which has been designed for the patron.

IN summarizing the above it should be impressed upon those persons responsible for the design of the theatre building that its purpose does not end with the projection of an image upon the screen. The structure is a business venture which must be maintained economically and efficiently. In order to have it that way, concentrated study must be given to the proper selection and utilization of materials used and correct solution to the problem of design.

David Supowitz was born in Philadelphia on June 19, 1893. He received his education at the Philadelphia public schools, and graduated from the University of Pennsylvania School of Architecture in 1915—receiving his Master's Degree on a fellowship in 1916. After the World War I, he opened an office with Stanley Neubauer, who has since retired from the practice of architecture. His first theatrical work was done on the old Cayuga, Philadelphia, and since that time he has worked on approximately 150 theatres. He competed in a Chicago War Memorial Contest and was in the first 10 out of 131 entrants. He also won first prize for his design for the new architectural school for the U. of P., which will be built in the near future. In addition to the usual architectural work, Supowitz has done work on numerous residences, apartment buildings, garages, advertising structures, etc.

Building Codes and Ordinances

Constantly restricting codes and laws are affecting theatre construction. Some have real merit, others none.

BY H. R. MAIER

BEFORE the advent of the motion picture, the building codes of the larger cities did not pay too much attention to the construction methods or to the kinds of materials that went into the old legitimate theatres. However, when the need arose to supervise the construction of the many motion picture houses that have been built in the last 20 years, most of the larger communities, and, in some instances, even the states themselves, realized that it was of the prime importance to either write a new code for places of public assembly or to revise the existing codes to meet the new conditions. Of course, this work is not yet completed as there is still a large variance amongst the larger cities as to just how a theatre should be built and what materials must be used in its construction.

THE one agency which has helped most to bring about a real interest in theatre building codes is the Board of National Fire Underwriters. It is true, of course, that this agency functions in the interests of the fire insurance companies in an effort to reduce fire hazards in all buildings, but the Underwriters quickly realized that the old wooden theatres were usually fire traps with their wooden trusses, wooden floors, and wooden exit stairs, and by putting premium upon fire-proof construction they have helped clarify the building problems for the communities who have tried to draw up theatre building codes.

The Board of National Fire Underwriters further concerned itself with safe-guarding a building against electrical mishaps which usually result in a fire and today practically all of the building codes in existence follow the National Board of Fire Underwriters in their requirements as far as the installation of all electrical equipment in a theatre is concerned. Rigid conduits to carry the wires, proper fusing of the branch circuiting, proper protection as regards the entrance of an electrical service into a building, and the control of all panic lighting is carefully covered in the National Board of Fire Underwriters code and, if followed, will result in a safe theatre.

THE problem involved in enforcing any code can best be solved if the inspection and approval of the work is carried out on an honest and practical basis. It is, unfortunately, true that although good codes have been written, the larger municipalities do not have enough men available to see that the provisions of the codes are properly carried out and it is in the method of enforcing the code that I believe the biggest variation exists in the country today. Some of the code requirements in the various cities are mandatory and from these requirements there should be no variation or appeal. However, in practice, this does not always work out and the result is that a good code can be circumvented by the well-known "political pull." This circumvention is not always in the best interest of public safety, but politics being what they are, I doubt if we will ever be able to overcome this practice entirely.

IN this short article, it is impossible to compare many of the codes as they are too numerous to mention. I believe it will be easier to point out generally how most of the codes agree on the larger questions that come up in building a theatre. In most of the communities today it is necessary to build a theatre of fireproof construction. In other words, the frame-work must be of steel, protected by concrete. The walls must be of brick or tile; the floors must be of concrete. The stairways must be of steel and concrete or other non-combustible materials. The booth construction must be fireproof and must have two independent exits. The air conditioning and ventilating equipment must be controlled by fire dampers and other devices so that in case of a fire or a panic the equipment can quickly be shut off. Wood, as a building material in the theatre, is practically barred, except in some of the smaller communities where in the 1,000 seat house or under one is still permitted to use wood in the roof and even on the floors.

THE question of exits from the theatre is, of course, always of paramount importance. Here there is not too much variance. It seems that most of the law makers agree that it is better to have too many exits than too few and while no two codes agree on the number of inches of exit space required per seat unit, they are all, to my mind, on the safe side.

WITH the wider use of mechanical refrigeration, a whole new batch of problems has arisen. For instance, in New York City direct expansion cannot be used, where as in most of the

Herman R. Maier has a background in the theatre field that qualifies him as an authority. Born in New York City in 1890, he was educated in the public schools, graduated from New York University as a B. S. in C. E. in 1911, worked on various building projects as material clerk, engineer, and assistant superintendent until 1917 when he attended the first Officers' Training Camp as a Second Lieutenant, being assigned to 305th Engineers Combatant Regiment of the 80th Division. Overseas 16 months, he returned in August, 1919, and was discharged as a Captain, Engineers ORC. He joined Fred T. Ley Company, builders, as superintendent on construction and was later made vice-president in charge of the southern area, but left to come with Warner Brothers Pictures in 1929 as construction chief, to which job was later added the post of general purchasing agent of the company. In his work, he supervises 400 theatres in operation, divided into eight zones, with his office handling all the maintenance, equipment and new construction for the company. He has 60 new theatres to his credit as well as the reconstruction of more than 150. A member of the Engineers Club, New York City; the American Society of Mining and Met. Engineers; and the Society of Military Engineers since its inception, he ranks with the industry's leaders in his field.

other large cities it can still be installed. Most of the codes again are following the rules and regulations of the Board of Fire Underwriters in the method of protecting the patrons against mishaps to an air conditioning system so that, if in designing a plant their code is followed, the plant will usually meet all requirements of safe construction.

Considerable advancement has been made regarding sanitary arrangements and comforts in theatres. It is no longer possible to operate a theatre without proper provisions of toilet accommodations for the patrons. Some codes prescribe the minimum number of fixtures per seat unit. Others ask for so many per 100 people, including certain number of standees and, in general, there is little to criticize in the various codes in connection with this important part of theatre building.

THE question of ventilating the theatre has still not yet been properly solved. There aren't many of the codes which deal with this subject properly and even those codes which do cover the subject are not properly enforced due primarily to the lack of personnel in the supervising offices.

Several years ago, the writer had occasion to supervise the building of a theatre in London, England, and while a good many of the local ordinances were not clear, or did not cover the subject, there is one ordinance on the books of the London County Council which could well be followed here in America. This ordinance reads that for every person in the theatre or in the standee space, there must be introduced into the theatre 1,000 cu. ft. of fresh air per hour and this air must be mechanically washed. In other words, this requirement insures an odorless house at all times. There are only a few codes in the United States that require as much as 900 cu. ft. of air per hour, per person, and even then 60% of this is not fresh air but is recirculated air.

IN the old days, an owner was permitted to space the seats in the theatre in any way that suited him. Today most of the codes cover the spacing of seats back to back and also the number that are permitted in any one bank. The spacings vary from 30″ to 33″ back to back, but practically all of the codes agree that there should not be more than 14 seats in a bank that has two aisles, or more than seven seats in a bank that has only one aisle. In other words, for a patron to get to an aisle, he is not permitted to pass more than six people.

In connection with the seating of houses, the widths of the aisles have now been increased so that in most instances two people can walk up or down an aisle abreast and most codes insist on at least a minimum of five feet at the head of the aisle. In the matter of hold-outs and size of standee spaces, there is also a wide difference in the rules. Fortunately, in the larger cities, the fire departments who have certain regulatory powers over theatres use good judgement in controlling the number of people who are permitted to stand either at the rear of the auditorium or in the reception lobbies leading into the theatre. The best codes insist that not more than two people deep shall stand in the standee space with the aisles open at all times, and that not more than one-third of the lobbies be utilized for patrons waiting to get into the theatre.

In closing, I would like to say that, when an architect asks me what code to follow in designing a house, I always refer him to the New York City building code and to the code of the National Board of Fire Underwriters. If he follows these two authorities, he will not necessarily have the cheapest theatre, but he most certainly will have the safest theatre. This is not said in disparagement of the codes or regulations of other municipalities or states, but I say it because I believe that there has been more thought and study put into the theatre building section of the New York City code, than has gone into the codes of most of the city or state codes that I have had to use.

Progress in Functional Designing

The correct technical approach of designing for use has evolved new forms of ornamentation.

BY BEN SCHLANGER

IF we were to tell the story of the progress made in the design of the motion-picture theatre it would read as follows: Design approach has passed from the one stage—the decorative solution with subsequent forced application of the technical requirements—to the present stage—the correct technical approach which creates the inspiration for the decorative values.

This trend in design is found not only in theatre structure design, but is also found in the recent trends of design in all other types of buildings. However, in the case of the motion-picture structure, the so-called justification of "ornamentalism" has delayed the popular acceptance of the constructive approach although the new trend does not necessarily preclude the use of ornament for enrichment. On the contrary, new ornamental forms evolve from the fresh approach. It is also true that even superficial ornamentation is not completely abandoned but it is used with greater care, more sparingly, and with greater telling effect because it accents the beauty of the basic design. Even the superficial ornament is designed in accordance with the manner in which its texture and color will react to light and sound.

In the past, basic forms were not studied and made to appear attractive in their own structural forms—the so called beauty was achieved by covering all the exposed surfaces indiscriminately with ornamentation.

THE exhibitor may, as he will, question the practical dollar-and-cents value to him to be derived from this new approach. The answer comes in the affirmative in offering two definite dollars-and-cents values.

Firstly, the structure is designed to insure the greatest comfort for the patron in seeing and hearing the screen presentation because visual and acoustical requirements are given prime consideration. Secondly, the type of decoration which evolves from the constructive approach is one which because of its lack of whimsical character is not likely to become out of style as decorations in the theatre have in the past.

THE theatre structure should be thought of as having three separate elements:

1. The street facade
2. The auditorium
3. The auxiliary interior spaces

These three elements each present a separate and distinct problem. They are related only as to how they join together in the whole plan.

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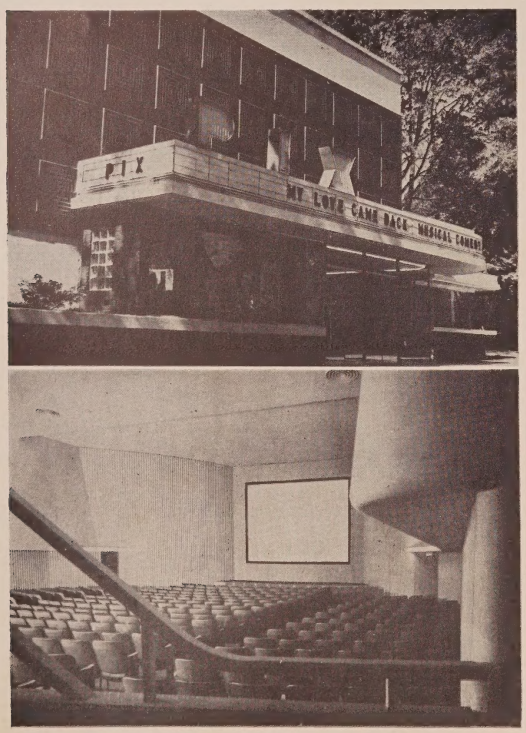
Ben Schlanger was born 36 years ago in New York City, where he was educated at Columbia University and the Beaux-Arts Institute of Design. He worked for various architects until 1926, when he started his own practice as an architect for buildings housing public assemblies, for educational, recreation and community purposes. He is chairman of the sub-committee on theatre design of the Society of Motion Picture Engineers, and has been a member of the SMPE since 1931. His personal research of the visual and auditory problems of auditorium design has been published, and his original work in creating auditorium floor slopes to supersede the strong downwardly pitched floor is now very widely used throughout the world. Schlanger is a consultant to architects in the United States, Canada, Central, and South America. Among the houses he has designed are the Normandie, Jewel, and Bell, New York City; Whitney, Hamden, Conn.; Westville, New Haven; Waldo, Waldoboro, Me.; Pix, White Plains, N. Y.; Pix, Rock Hill, S. Carolina; and Brockway, Brockway, Pa.

THE main function of the street facade, other than to complete the enclosure of the structure, is to create a desirable attractiveness necessary for advertising purposes. For this element there is a free and wide choice of design possible. Local architectural character based on tradition, a trend of modern design, economic considerations, and general restraint are the guiding factors.

The problem of the auditorium design, on the other hand, is entirely different. The rigid requirements of the visual and acoustical phases of the work restrict the choice of the architectural design to such design as will form a definite part of the controlling technical features. This definitely means that one is not free to choose a traditional or optional modern style of architecture for this interior treatment, if one wants to have an auditorium which will enable the patron to have the visual and acoustical comforts he is seeking.



THE PIX THEATRE, Rockhill, South Carolina, has created wide comment in the industry, because of its unusual design. Architect Ben Schlanger.

The architecture of the motion-picture theatre auditorium can be broken down into three parts:

1. The basic shape.
2. The surface textures or the manner in which the surfaces will vary from that of being absolutely unbroken and continuous.
3. The color applied on the finished surfaces.

ALL of the above considerations very directly affect the acoustical and visual conditions in the auditorium. Here is a specific instance where form and surface treatment must follow and be inspired by function for a proper basis of design. To be sure, this approach leads to a more difficult task which necessitates much more study than would be given if an optional form of design were resorted to. But the results obtained from this logical and scientific approach will endure, whereas the other approach will produce structures marked for a constant decrease in usefulness. Meaningless decorations are soon tired of and the lack of suitable acoustics and visual comforts become more evident with the passing of time.

THE third element of the motion-picture theatre structure, that of the auxiliary interior spaces, does not preclude the freedom of design to a point where any optional style of architecture may be employed. These spaces, such as the lobby, foyer, lounge, rest rooms, etc., can be treated as colorfully as may be desired with the type of surface break-up and covering being entirely optional. There is, however, one important limitation in the design of these spaces. That is the lighting. The level of illumination in these areas must be such as to make a proper transition of lighting from the daylight of the street to the comparative darkness of the auditorium when the picture is being projected. This is also true of the transition from the bright artificial lighting of the street and lobby at the evening performances. As a person passes from the street to his seat in the auditorium it is necessary that he should not have to suffer eye strain and temporary blindness because the pupil accommodation of his eyes cannot stand the abrupt changes in lighting intensities.

THE whole purpose of the analysis of theatre structure design is to bring out that the main function of the theatre enclosure is to provide a means for the patron to thoroughly enjoy, with the necessary comforts, the entertainment which he seeks.

To thoroughly enjoy the screen presentation it is vital that there be no distractions whatever appearing within the range of vision of the spectator. The simplicity and controlled texture of the surface treatment required in these areas in the range of vision would for some exhibitors used to the old school of decorations be too much to swallow. They would actually be fearful of losing business because every part of their auditorium was not highly decorated. If they do feel this to be so, they have only to know of the newer theatres being operated successfully which, in their design treatment, concur with the new functional architectural trend for the auditorium.

THE range of vision, sometimes referred to as the angle of vision, including the peripheral or outer indistinct regions of the range, covers an angle of at least 80 degrees horizontally. The vertical range is somewhat smaller, especially in the upper region. The seating location most remote from the screen should be used to determine the portions of the wall and ceiling surfaces which will come within the range of vision while viewing the screen.

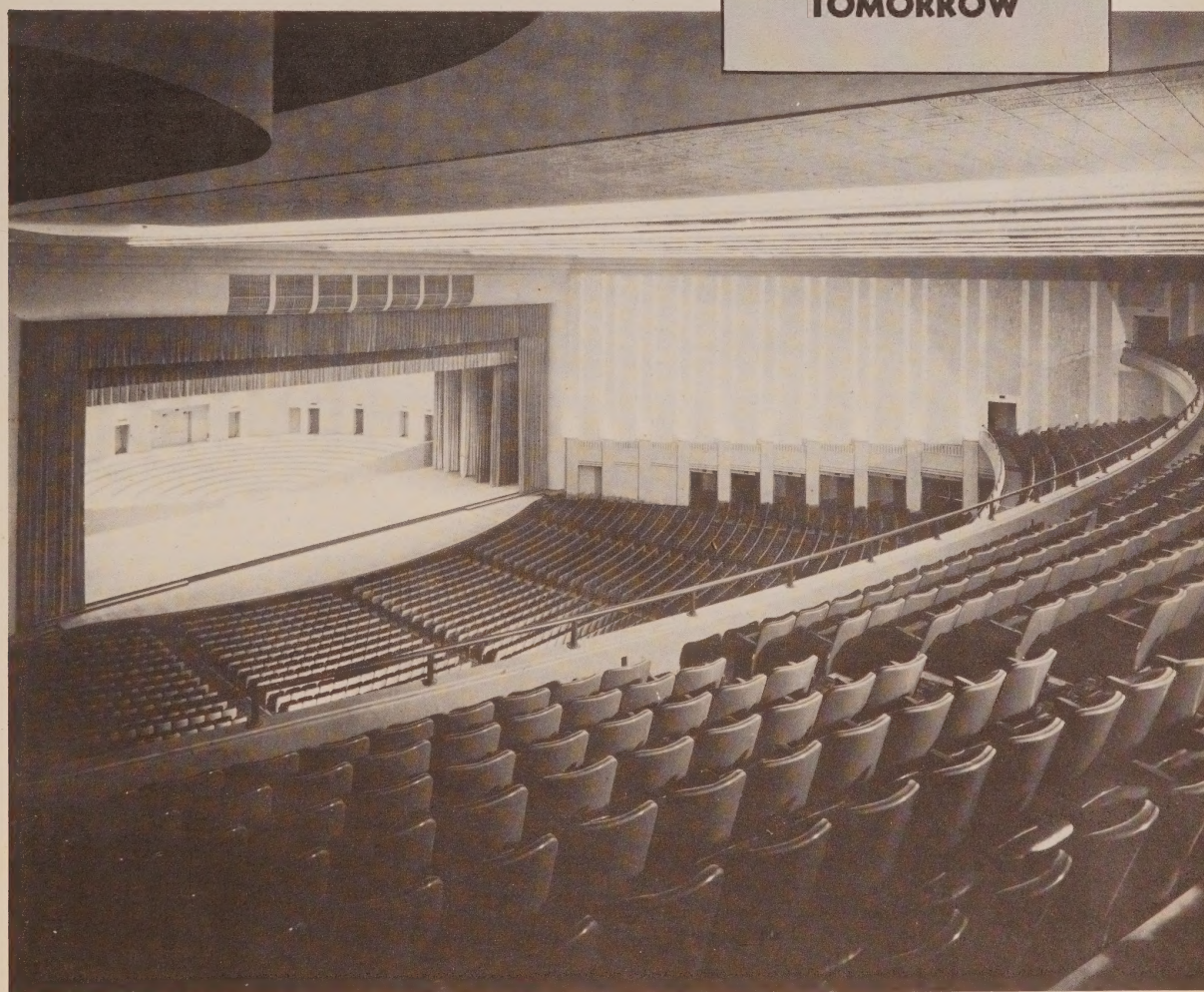
On these surfaces there should not be any secondary lighting in the form of fixtures or coves to be used during the screening period, unless the light source is shielded and the light rays are directed to the audience and not on the surfaces themselves. These surfaces should not be made invisible as may be inferred from aforesaid thoughts. They should be designed to allow the stray light reflections from the screen to be reflected into the auditorium in a useful manner. Most of this light can be directed so that it falls onto the audience, with the exception that the angularities of the surfaces should permit light rays to reach the eyes of the audience only in a very small percentage and in a very even and overall manner. In this way, unnecessary and undesirable darkness is avoided by the ability to use lightly tinted walls.

WHILE only some of the surfaces of the auditorium are affected by the needs of visual considerations, all of the surfaces of the auditorium are affected in the proper acoustical design approach. In the instances of both the acoustic and vision problems, it is necessary to design the surfaces so that both light reflections from the screen and sound reflections from the speaker horn will be properly controlled and directed for best efficiency and comfort considerations.

THEATRE DESIGN *of* TODAY AND TOMORROW

It is the duty of a constructive trade press to adequately record and mark the progress and changing trends of the physical structures which comprise the sales outlets of its industry. While not the number of theatres, but the number of filled theatre chairs predicates the motion picture industry's income; this publication has always believed that there was a definite relationship between the patron satisfying modern structure and the number of its seats which were filled together with the price the patrons paid to fill them. Our shooting and assembling of photographs for a complete pictorial exposition of modern new construction and remodeling, and our ferreting out of descriptive facts and products used has produced the following results: (1) Hearty applause from Architects, Maintenance Engineers and Purchasing Executives who are responsible for keeping their theatres in tune with the times; (2) Steady worldwide demand for current and past issues; (3) A pride in ownership of really modern theatres; (4) Standards of excellence to be accomplished or approached in future construction; and (5) Quickening interest in photographs on the part of the rest of the trade press. Through the above we take a certain satisfaction in the belief that we have furthered the best interests of the industry we serve.

THE HALL OF MUSIC at Purdue University, Lafayette, Indiana, while not a commercial theatre venture, is too outstanding a theatre building accomplishment to be overlooked in any study of 1940's structural activities. Built as an adjunct to educational and campus expression it becomes not only the nation's largest theatrical building (6208 seats) but what is probably its most modernly equipped one as well. With modern simplicity its keynote, the vast stage and seating plan can best be noted below.



THE PROSCENIUM as seen from under the first balcony (15 ft. clearance) is well draped to reduce the effect of its size (100 ft. wide by 37 ft. high). The grilles above it conceal the special amplifying loft. Exceptional width that permits sidewalls to curve smoothly to meet the stage opening and a depth of stage that permits the screen to set deep, produces perfect sight lines from every seat.

THE EXTERIOR is more scholastic than theatrical for it need not sell its attractions or compete with "main stem" lighting. This view of the rear portion is shown to illustrate the size of the band shell (50 ft. radius and 82 ft. from stage front) and of stage box (136 ft. by 32 ft.—rigged for 24 sets).

REFERENCE FACTS:

Architect: Walter Scholer

Consultant: J. Andre Foulihoux

Acoustical Engineer: Dr. F. R. Watson

Sculptor: Jon Johnson

Size of Lot: 307 x 195

Seating Capacity: 6208

Cost Without Ground: $1,205,000

Acoustical Treatment—Spongecoustic. Manufactured by Johns Manville Co.

Air Conditioning—Steam refrigeration system, installed by Freyn Brothers, Indianapolis.

Carpets—Manufactured by Alexander Smith and Sons Co.

Chairs—Cohyde covered, spring edge seat and upholstered fabric covered backs in pastel blue. Metal clad backs colored in ashes of roses. Manufactured by Ideal Seating Co. Cohyde, manufactured by Cotan Corp. Fabric manufactured by La France Industries.

THE AUDITORIUM with 3626 chairs on the main floor, 1622 chairs in the first balcony and 960 chairs in the second balcony can be reduced to a 2500 seat theatre for more intimate performance by dropping a curtain from the first balcony. The lighting troughs serve also as air conditioning ducts. Note the side wall angles that are said to produce perfect acoustics and the sound control room in the ceiling.

Construction Material—Brick, concrete and steel.

Curtain Controls—Manufactured by J. R. Clancy, Inc.

Draperies and Stage Curtains—Manufactured by Houston Scenic Studios.

Generators—Hertner. Manufactured by Hertner Electric Co., Chicago.

Lighting Fixtures—Manufactured by Hub Electric Co., Chicago.

Orchestra Lift—Manufactured by and installed by Shield Studio, St. Louis. **Designed by J. R. Clancy, Inc., Syracuse.**

Projection Lamps—Peerless High Intensity. Manufactured by J. E. McAuley Mfg. Co.

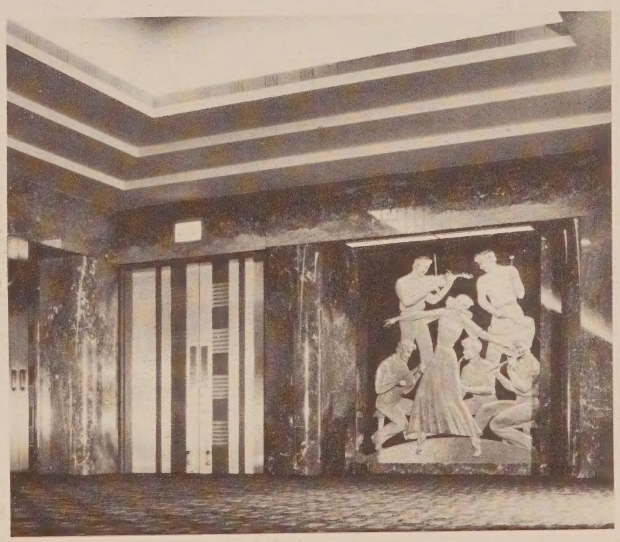
Projection Machines—Simplex E-7. Manufactured by International Projector Corp.

Screen—Walker white sound screen. Manufactured by Walker American Corp.

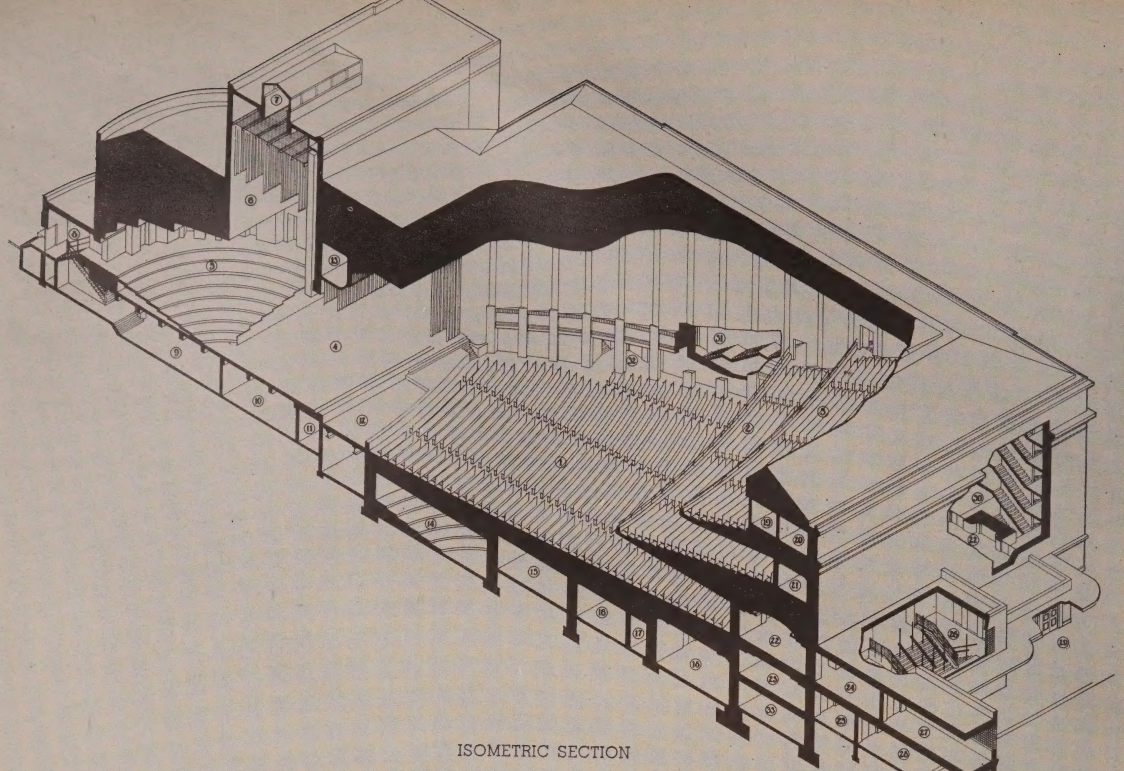
Sound—Western Electric M-101-G. Manufactured by Western Electric Mfg. Co.

Stage Rigging—J. R. Clancy, Inc., Syracuse.

Supply Dealer—National Theatre Supply Co.

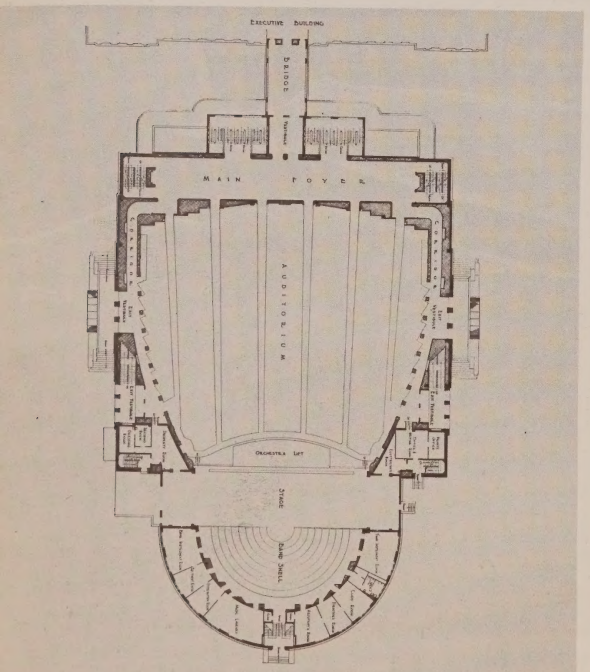


THE MAIN FOYER finished in chocolate tinted marble and painted plaster of ashes of roses and pastel blue is spacious and modern. Metal clad doors and specially designed aluminum bas reliefs at either end heighten the modern beauty. Specially designed Alexander Smith carpets grace the floors.

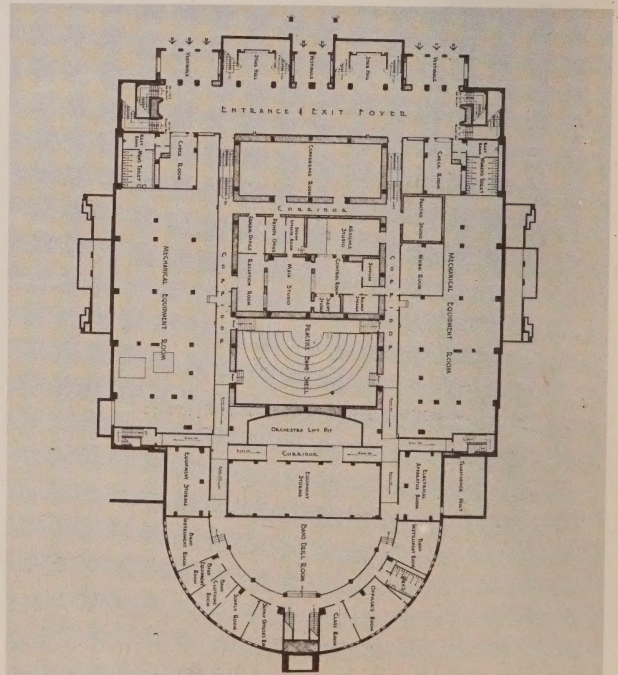


ISOMETRIC SECTION

1. Auditorium
2. 1st Balcony
3. 2nd Balcony
4. Stage
5. Band Shell
6. Gridiron
7. Stage Ventilator
8. Band Entrance
9. Band Drill Room
10. Equipment Storage
11. Corridor
12. Orchestra Lift
13. Amplifying Loft
14. Practice Band Shell
15. Main Studio
16. Audience Studio
17. Corridor
18. Conference Room
19. Projection Booth
20. Foyer
21. Foyer
22. Main Foyer
23. Entrance and Exit Foyer
24. Vestibule
25. Entrance and Exit Vestibule
26. Stair Hall
27. Bridge to Executive Building
28. Underpass
29. Entrance
30. Stairs to 1st and 2nd Balcony
31. Exit Stairs from 1st and 2nd Balcony
32. Exit Corridor
33. Mechanical Equipment Room



MAIN FLOOR PLAN



BASEMENT AND GROUND FLOOR PLAN

THE FRONT is decidedly unusual in design. The lower facade is semi-circular and is finished in two shades of face brick. The front of the marquee follows the contour of the front elevation with the sides extending straight out. Theatre name sign, in the unusual capital and lower case, was erected as part of the building. Attraction boards were erected on the lawn, leaving the marquee free of billing.

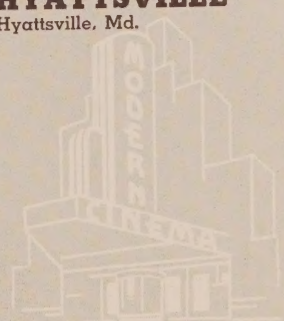
In Colonial days, Bladensburg, Maryland, was a thriving commercial center, whence sailed argosies laden with tobacco and other crops. As time marched on, and both Man and Nature altered the course of events, Bladensburg slid into obsolescence. After the establishment of the District of Columbia and the ascendency of the City of Washington, Hyattsville, just to the north of Bladensburg, started its development as one of the National Capital's major suburbs, the while clinging to its Colonial heritage. As the Capital City grew, so also developed Hyattsville. For some time the city has had a theatre, but so great has been the growth of Hyattsville (now with a population of nearly 5,000) that the 350-seat Arcade no longer was adequate to meet the demands. To remedy this situation the Globe Amusement Company commissioned New York Architect John Eberson to design an 800-seat theatre which should give Hyattsville a theatre than which not even the National Capital should have any better. On these three pages are seen what Architect Eberson accomplished. Under the operating direction of Sidney B. Lust, who directs five other theatres in Maryland and two in the District of Columbia, the theatre may well serve the best interests of the community and Mr. Lust, be a lasting tribute to Mr. Eberson's imagination, and a testimonial to the memory of Joseph Makover, late president of the owning company.

1940 PRESENTATION No. 1

The New

HYATTSVILLE

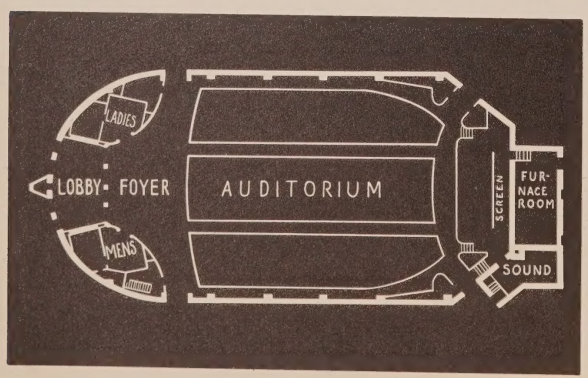
Hyattsville, Md.



Owner: Globe Amusement Co.
Architect: John Eberson

THE AUDITORIUM has been designed for perfect sight from every vantage point. Color scheme near the proscenium is decidedly a darker blending of the various shades used in the rest of the auditorium. White statuettes have been set in illuminated coves near the proscenium.

THE LADIES' LOUNGE has been exquisitely appointed and is a fine example of thoughtfulness for the lady patron.



REFERENCE FACTS:

Size of Lot: Irregular 97'-60' x 223'-19'

Seating Capacity: 802

Cost Without Ground: Not Available

Acoustical Treatment—Textured plaster, and rockwool over fabric. Rockwool manufactured by Geo. R. Hall & Sons.

Air Conditioning—Westinghouse refrigeration. Installed by Combustioneer Corporation.

Carpets—Alexander Smith. Manufactured by Alexander Smith & Sons Co.

Chairs—Full upholstered, spring edge seat. Manufactured by American Seating Co.

Construction Material—Face brick, concrete, steel.

Curtain Controls—A.D.C. Manufactured by Automatic Devices Co.

Decorator—Rambusch Decorating Co.

Draperies and Stage Curtains—Manufactured by Charles H. Kenney Studios, Inc.

Furniture—Manufactured by Thonet Brothers.

Generators—Stabilarc. Manufactured by Automatic Devices Co.

Lighting Fixtures—Manufactured by Charles J. Weinstein & Co., Inc.

Sign and Marquee—Fabricated and erected by Beacon Sign Co.

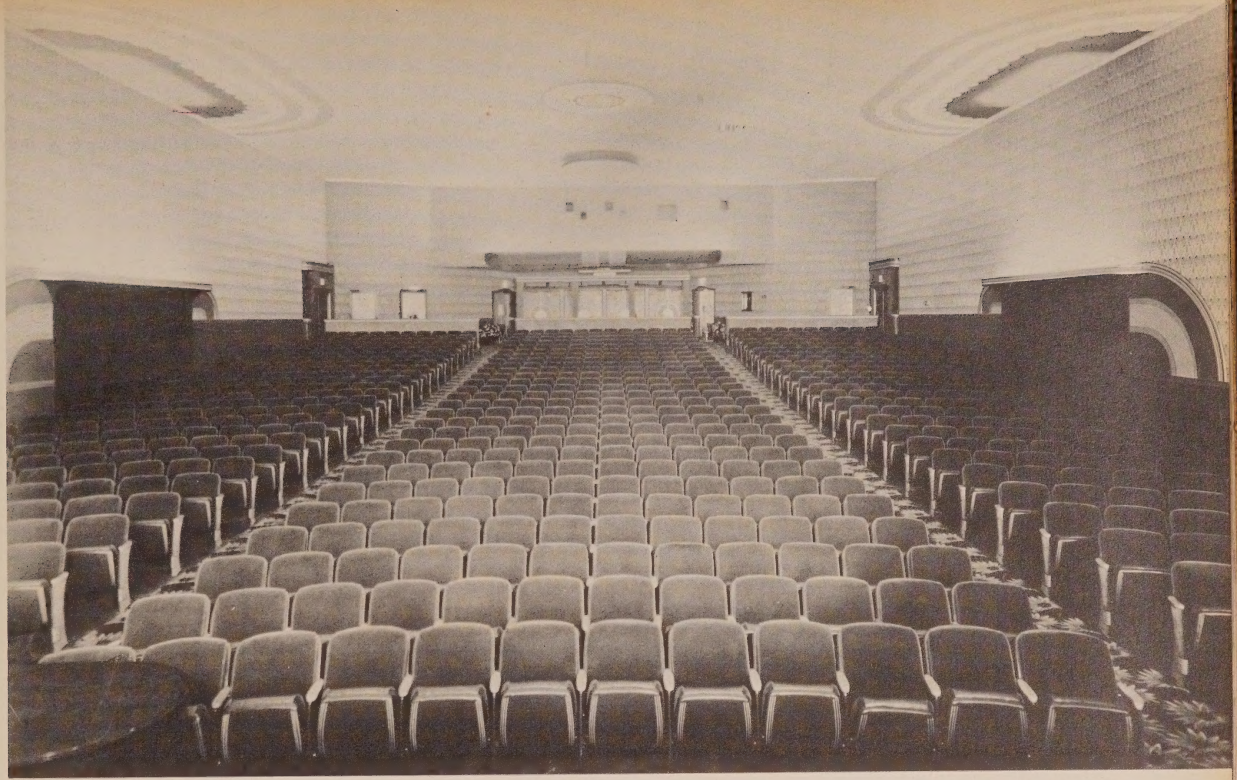
Sign Letters—Adler. Manufactured by Adler Sign Letter Co.

Sound—RCA. Manufactured by RCA Mfg. Co.

Supply Dealer—Ben Lust.

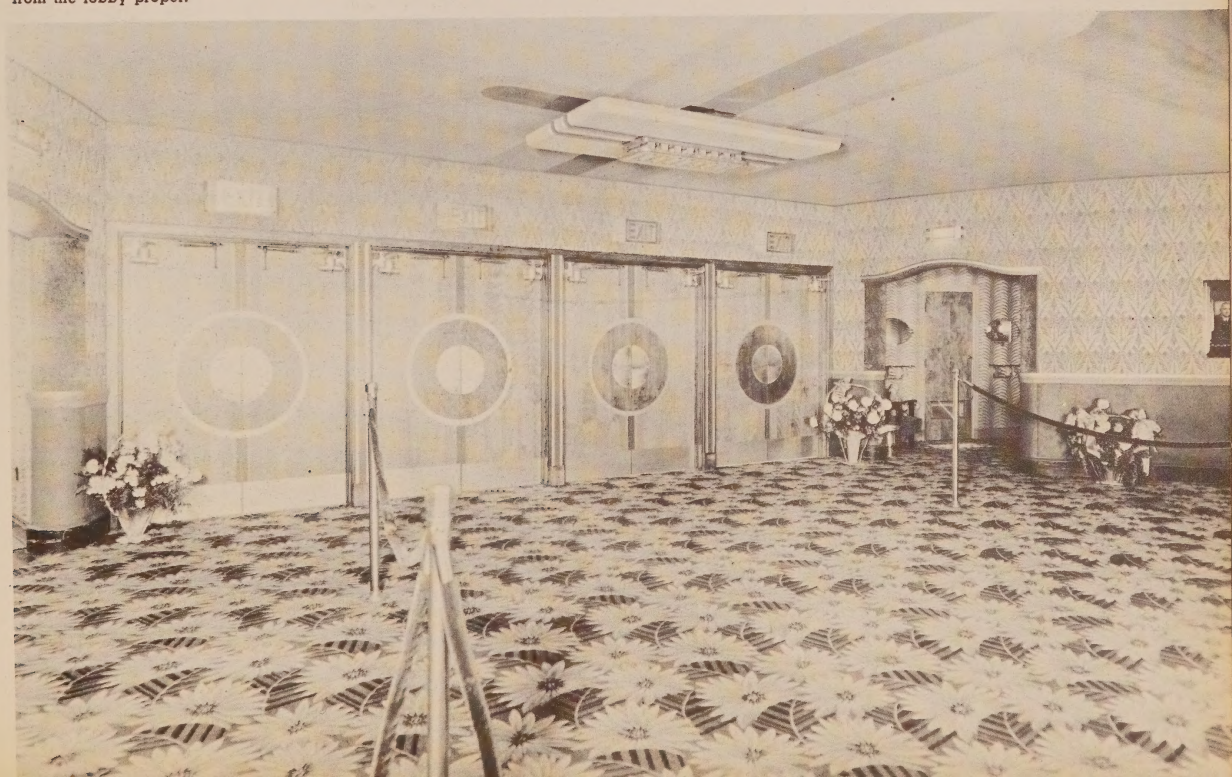
Projection Machines—Motiograph. Manufactured by Motiograph, Inc.

Rubber Mats—Manufactured by Puritan Rubber Co.



THE AUDITORIUM, looking toward the rear, allows a broader visualization of the spaciousness of this room. Varying shades of old rose, gold and midnight blue form the color schemes which results in a feeling of warmth. A large space separates the outside walls from the rockwool and fabric for better acoustics.

THE LOBBY is spacious and well carpeted to deaden the noise of patron traffic to and from the theatre. In this photo, a straight-on view of the doors leading to the outer lobby is obtained. On either side of these doors are the rest rooms, the entrances being set in recesses from the lobby proper.



1940 PRESENTATION No. 2

The Renovated

PALACE

Baldwinsville, N. Y.

Owner: S. & C. Theatre Corporation
Architect: Michael DeAngelis

Always a horrible thought to theatre owners is that of fire. In recent years theatres have been to a great extent spared that eventuality, but the possibility is still present, even in what are constructed as strictly fireproof theatres, and in that contingency necessitate costly renovations. On these pages we present a renovation, accomplished by New York Architect Michael J. DeAngelis, and one into which the owners of the Palace Theatre, Baldwinsville, New York, were forced by the ravages of fire. In this case, however, the actual building and decorating costs were kept so low as to seem nil in comparison with the magnitude of the benefits reaped.

THE AUDITORIUM is shown here as it appeared after its renovation. Well prepared plans and a business-like execution of them are responsible for the results obtained. Decorations, draperies, and wall fabrics have been chosen to blend harmoniously, with intermediate decorative friezes balancing the wall treatment in an effective manner.

THE AUDITORIUM before the renovation. This shell was transformed into an attractive and modern interior.

THE LOBBY before the decorative treatment, looked cold and uninviting. A well-executed renovation transformed it.

REFERENCE FACTS:

Size of Lot: 70 x 150

Seating Capacity: 850

Cost of Renovation Excluding Equipment $18,000

Acoustical Treatment—Velour and Celotex. Celotex manufactured by The Celotex Corp.

Air Conditioning—American Blower System. Manufactured by American Blower Co.

Carpets—National Mastland Wilton. Manufactured by Alexander Smith & Sons Co.

Chairs—Full upholstered with spring edge seat. Manufactured by American Seating Co

Curtain Controls—A.D.C. Manufactured by Automatic Devices Co.

Decorator—Novelty Scenic Studios, Inc.

Furniture—Royal Chrome. Manufactured by Royal Metal Mfg Co.

Generators—Hertner. Manufactured by Hertner Electric Co.

Lighting Fixtures—Manufactured by Ruby Fixture Co.

Projection Lamps—Peerless Magnarc. Manufactured by J. E. McAuley Mfg. Co.

Projection Machines—Simplex E-7, Super Simplex Bases. Manufactured by International Projector Corp.

Screen—Walker. Manufactured by Walker American Corp.

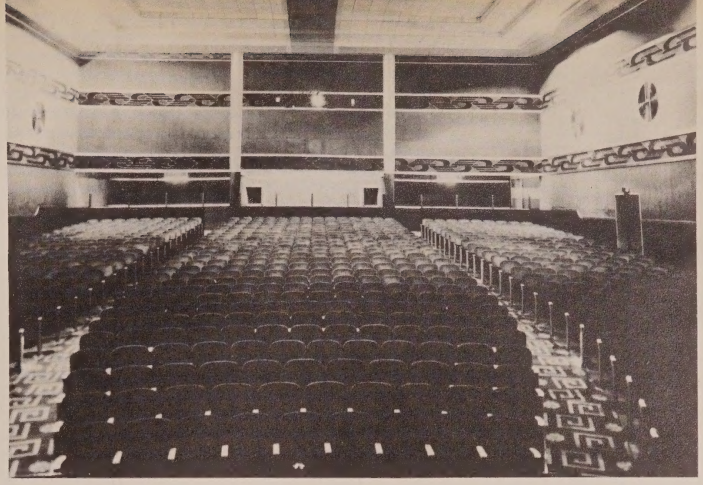
Sign and Marquee—Fabricated and erected by Flexlume Sign Co.

Sign Letters—Wagner. Manufactured by Wagner Sign Service, Inc.

Sound—Simplex 4 Star. Manufactured by International Projector Corp.

Ticket Register—General. Manufactured by General Register Co.

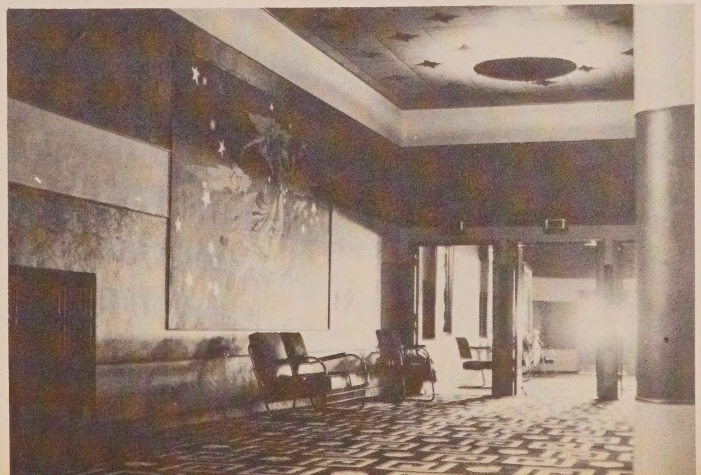
Supply Dealer—National Theatre Supply Co.



THE AUDITORIUM, looking toward the rear, affords a splendid view of the overall effect created by the smart handling of the decorative treatment. The decorative friezes used on the walls are plainly visible here.

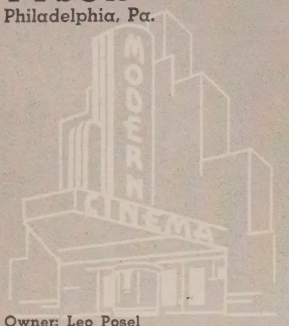
THE FOYER looking toward the standee room. This view illustrates a continuity of decorative treatment, blending the lobby and foyer into one room. Indirect lighting has been used in these areas exclusively.

THE FOYER, looking toward the outside lobby and exits again we have an illustration of the blending of rooms through the use of a general decorative treatment. Both rooms being large, a broad treatment was required. Note the mural.



1940 PRESENTATION No. 3

The New
TYSON
Philadelphia, Pa.



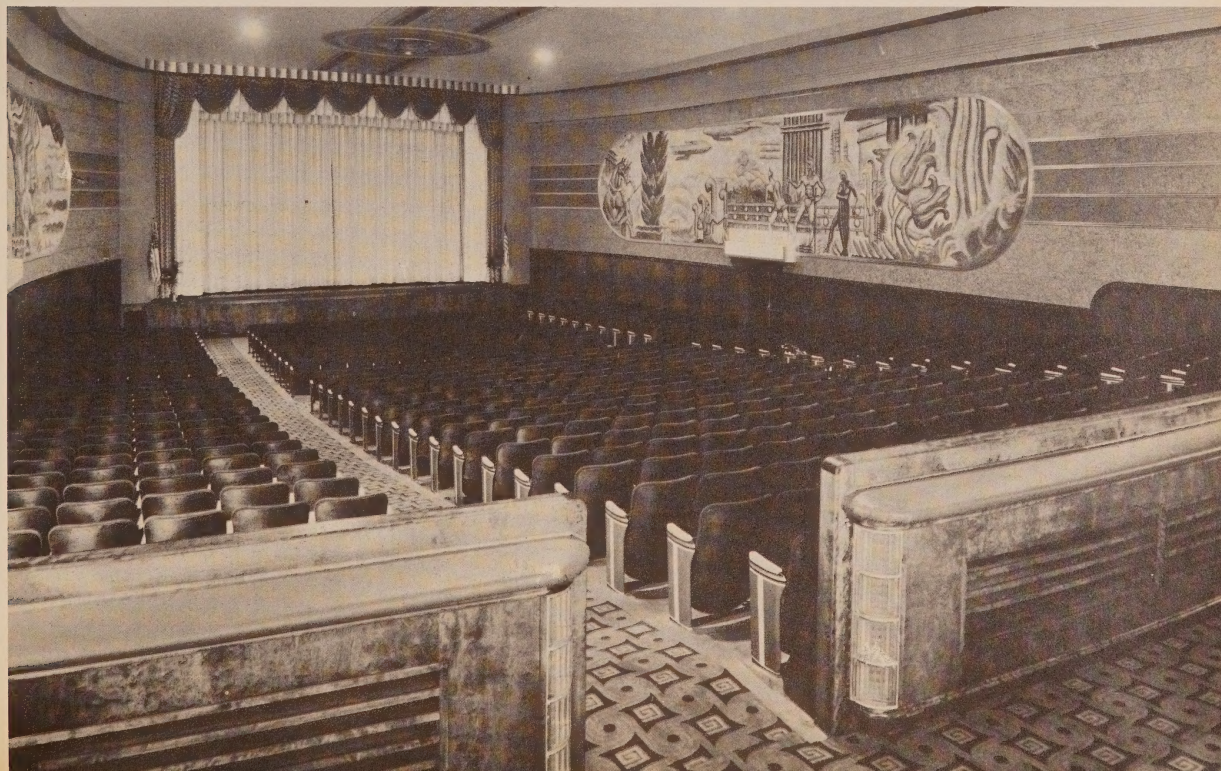
Owner: Leo Posel
Architect: David Supowitz

Latest addition to the rapidly lengthening chain of neighborhood cinemas, operated by Philadelphia's Leo Posel, is the Tyson Theatre, located in the newly developed Castor Gardens section of Philadelphia. Here, from the plans of Philadelphia Architect David Supowitz, has been brought into being a theatre which eloquently bespeaks the owner's avowed purpose: to bring to residential areas (where, of course, the zoning regulations permit) their own particular theatres, showhouses which shall be the equal in appointments and comfort, as well as in pictorial entertainment offered, of any of the generally accepted first-run, down-town theatres. That Architect Supowitz and all those whose artistry and artisanship went into the erection and the equipping of the theatre materialized Mr. Posel's ideas may be observed on this and the two following pages. Plainness, almost severe at times, is the general theme, but, after all, "the picture's the thing," especially when it can be viewed in such comfortable surroundings as these—and here there is comfort.

THE EXTERIOR, finished in red and ivory structural glass, is of plain but definitely modern design. A stainless steel trim on the structural glass and the stainless steel boxoffice are additions worthy of mention. The wide facade offers many showmanship possibilities.

THE AUDITORIUM, looking toward the rear, gives a better view of the murals painted on Thermax acoustical material, and of the dado in natural wood paneling. Especially to be noted is the curvature of the rear wall near the ceiling, with the acoustical material forming a broad band all around the auditorium for the improvement of sound. Darker toned Thermax for the mid-section of wall adds a variation.

THE PROSCENIUM is simply designed but gayly decorated with drapes and valances. From this, across the ceiling, run broad bands centered in which are the Anemostats for air distribution. In the standee rail, we also note, grilles for air distribution. Here novel and interesting additions are the padded leather arm rest and the back lighted glass block aisle heads.



THE FOYER shows, perhaps most forcefully, the effectiveness of simplicity. The doors, finished to bring out the beauty of the natural grain, offer the contrast to the monotone of the ceiling. The back-lighted glass-brick columns flanking the drinking fountain add further to the trim appearance of the area.

THE OUTER LOBBY continues the motifs of the foyer, with the natural wood-grain doors again the striking element of the decorative scheme. The treatment of the built-in display frames offers a matter-of-fact presentation of coming attractions that is compelling by reason of the absence of either garish adornment or blatant blobs of color.

REFERENCE FACTS:

Size of Lot: 59 x 146

Seating Capacity: 700

Cost Without Ground: Not Available

Acoustical Treatment—Thermax used on walls. Thermax manufactured by Northwest Magesite Co.

Air Conditioning—General Electric refrigeration system. Installed by S. S. Fretz, Jr., Inc.

Carpets—National Crestwood. Manufactured by Alexander Smith & Sons Co.

Chairs—Leather spring edge seat, full upholstered mohair back. Manufactured by Irwin Seating Co.

Construction Material—Vitrolite structural glass, face brick, concrete and steel. Vitrolite manufactured by Libbey-Owens-Ford Glass Co.

Curtain Controls—Vallen. Manufactured by Vallen, Inc.

Decorator—Paramount Decorating Co

Draperies and Stage Curtains—Manufactured by Paramount Decorating Co.

Furniture—Royal Chrome. Manufactured by Royal Metal Manufacturing Co.

Lighting Fixtures—Manufactured by Phillip Bortman.

Projection Lamps—Brenkert Enarc. Manufactured by Brenkert Light Projection Co.

Projectors—Super Simplex. Manufactured by International Projector Corp.

Rubber Mats—Manufactured by O. W. Jackson Co.

Screen—Dalite. Manufactured by Dalite Screen Co.

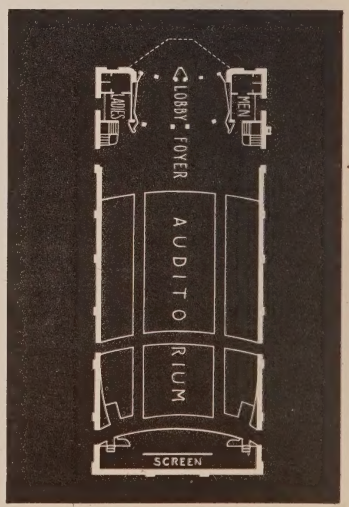
Sign and Marquee—Fabricated and erected by Apex Sign Co.

Sign Letters—Adler. Manufactured by Adler Sign Letter Co.

Sound—Simplex 4 Star. Manufactured by International Projector Corp.

Supply Dealers—National Theatre Supply Co. and Penn Theatre Equipment Co.

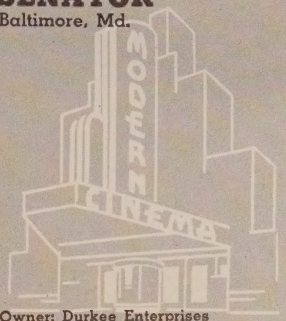
Ticket Machine—General. Manufactured by General Register Co.



The increase in theatre construction during the past few years has brought to Baltimore, Maryland, many new houses of which the city can be justly proud. On this and the following two pages we pridefully present the latest addition to the city's cinemas, the Frank H. Durkee Enterprises' Senator Theatre, designed by the Monumental City's own John J. Zink. For a quarter of a century, Architect Zink has been designing theatres, and that he has kept pace with the times is not to be contradicted by this, his latest conception, and that Frank H. Durkee and associates were not failed is equally manifest by these pictures.

1940 PRESENTATION No. 4

The New
SENATOR
Baltimore, Md.

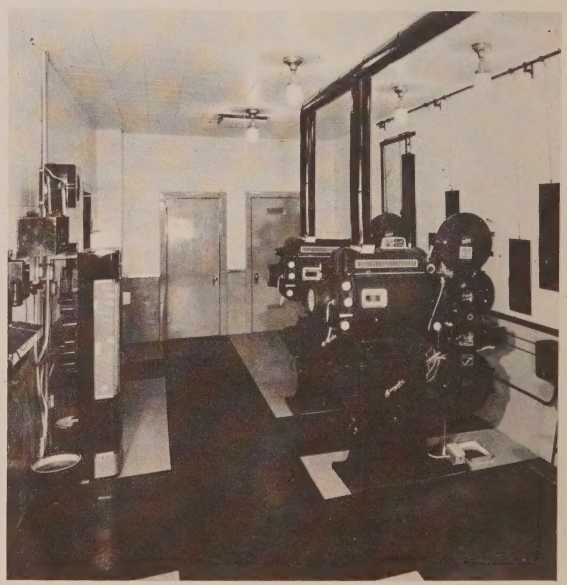


Owner: Durkee Enterprises
Architect: John J. Zink

THE EXTERIOR, of this modern cinema has not been garnished with an abundance of "gingerbread." Simple lines which radiate dignity and massiveness are its sole purpose of design. The circular upper structure is constructed of glass blocks and limestone. At night, fluorescent lamps give a varied-colored lighting effect, visible through the glass blocks.

THE AUDITORIUM, looking toward the stage, is beautifully illuminated by a most modern lighting plan. Walls have been covered in damask in shades of dubonnet and tan, with a maroon plaster dado trimmed in shades of tan. Stage curtains are gold-colored, with silver applique work.

THE LADIES' LOUNGE is a circular room, richly decorated. The walls have been covered with imported wall paper, having an ivory and yellow floral design on a blue field.



THE BOOTH is bright and cheery and, as can be seen in this view, is kept spic and span by the projectionists. The walls and ceiling have been covered with Celotex to prevent echoes.

REFERENCE FACTS:

Size of Lot: Irregular

Seating Capacity: 1100

Cost Without Ground: Not Available

Acoustical Material — Damask over spun glass. Spun glass manufactured by U. S. Gypsum Co.

Air Conditioning—Refrigeration system. Frick compressors. Installed by Paul J. Vincent Co.

Carpets—Vari colored Crestwood. Manufactured by Alexander Smith & Sons Co.

Chairs—Manufactured by Heywood-Wakefield Co.

Construction Material—Brick, steel, limestone, glass brick, structural glass.

Curtain Controls—Vallen. Manufactured by Vallen, Inc.

Decorator—Paramount Decorating Co.

Draperies and Stage Curtains—Manufactured by Paramount Decorating Co.

Generators—Hertner. Manufactured by Hertner Electric Co.

Lighting Fixtures—Manufactured by Consolidated Gas Co.

Projection Lamps—Peerless Magnarc. Manufactured by J. E. McAuley Mfg. Co.

Projectors—Simplex E-7. Manufactured by International Projector Corp.

Rubber Mats—Manufactured by Goodyear Rubber Co.

Screen—Walker white. Manufactured by Walker-American Corp.

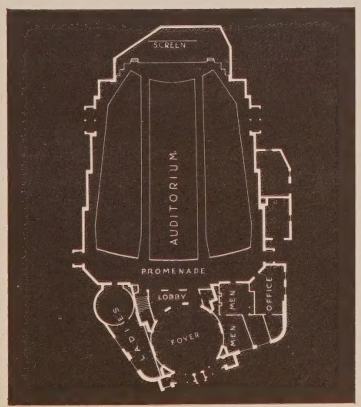
Sign and Marquee — Manufactured and erected by Triangle Sign Co.

Sign Letters — Wagner. Manufactured by Wagner Sign Service, Inc.

Sound—RCA. Manufactured by RCA Mfg. Co.

Supply Dealer—National Theatre Supply Co.

Ticket Register—Timco. Manufactured by Ticket Issuing Machine Co.



THE AUDITORIUM looking toward the rear, shows better the ceiling decoration. The center is a plain of light ivory hard-plaster, with the side and rear richly decorated in a mural design in ivory and rose on a deep blue field. The ceiling steps down from this point to the side walls.

THE LOBBY is circular, with a terrazzo floor. Lower walls are finished in antique walnut, with crotch walnut panels. The upper walls have been decorated with multi-themed murals in shades of ivory on an aquamarine field. The display frames have been built into the panelled wall.

1940 PRESENTATION No. 5

The Renovated

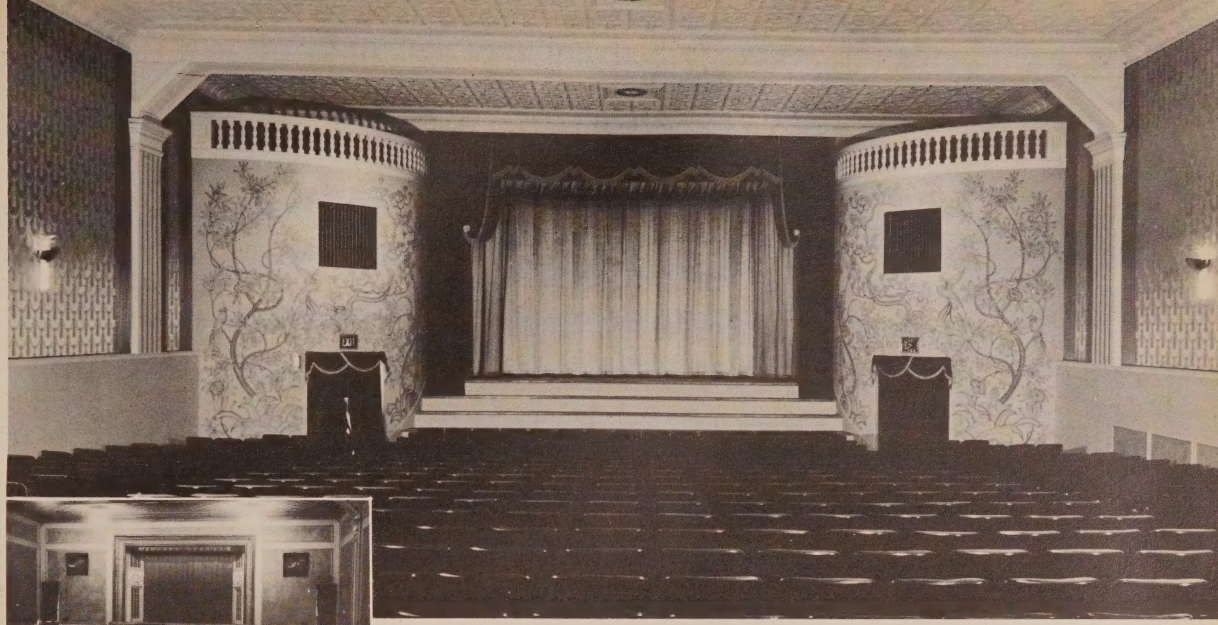
BRAINTREE

Braintree, Mass.

Owner: Lockwood & Gordon

That miracles do happen must become more and more apparent when one comes face to face with what is accomplished in turning old theatres into new. No genii of the lamp ever did for Aladdin what a substantial, but imaginative, architect and decorator can do for a theatre. As one of the more recent miracles of man's imagination and craftsmanship, there is presented on these two pages the remarkable transformation effected for Lockwood and Gordon's Braintree Theatre, Braintree, Massachusetts. These before and after pictures bespeak most eloquently the economic wisdom of the circuit's venture. It should be noted that, in an age where patron comfort is paramount in the theatre operator's mind, the circuit foreswore the rentals on two stores in order to utilize the space for lounge rooms. What they did with the space is shown in the bottom pictures on the next page. Comparison of the two sets of pictures reveals how the job was done, and it should be manifest that the cost was reasonable—but what an improvement!

THE EXTERIOR, as it now appears, and much as it did before its renovation, is shown. In the renovation, a Colonial design was effected, while stucco was applied to the original framework. The stores shown in the original photograph were converted into lounge rooms. Evergreen shrubs add to the appearance of the front, making silhouettes against the white stucco.



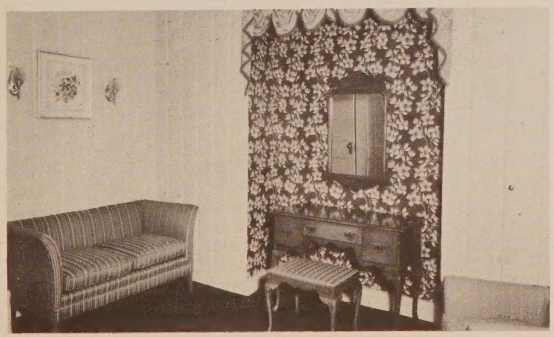
THE AUDITORIUM shows other and more striking improvements. A more typically cinema proscenium replaces the old style stage treatment, and a modern ventilation system outmodes the giant, visible fans. With no loss of desirable seating space, but with manifest improvement in looks as well as utility, the rounded exit area adds the touch that replaces the "barnness" of the former design. Maharam fabrics used on the side walls.

REFERENCE FACTS:

Seating Capacity: 760

Acoustical Treatment—Damask Over Rockwool.
Air Conditioning—Kooler-Aire refrigeration system. Manufactured by U. S. Air Conditioning Co.
Carpets—National Crestwood. Manufactured by Alexander Smith & Sons Co.
Chairs—(Existing).
Construction Material—Stucco applied to original framework.
Curtain Controls—Vallen. Manufactured by Vallen, Inc.
Decorator—Riseman & Lercari.
Draperies and Stage Curtains—Manufactured by Riseman & Lercari.
Furniture—Manufactured by Conant & Ball.
Generators—(Existing).
Lighting Fixtures—Ruby Mfg. Co.
Projection Lamps—(Existing).
Projectors—(Existing).
Rubber Mats—Manufactured by American Mat Co.
Screen—Walker. Manufactured by Walker-American Corp.
Sign Letters—Wagner. Manufactured by Wagner Service, Inc.
Sign and Marquee—Fabricated and erected by Eagle Sign Co.
Sound—(Existing).
Supply Dealer—National Theatre Supply Co. and Capitol Theatre Supply Co.

THE PROMENADE in these before and after views, is sufficiently eloquent to make quite superfluous any comment on the relative merits.



THE LADIES' LOUNGE continues the motif of New England simplicity, a simplicity that does not, however, sacrifice either beauty or utility.

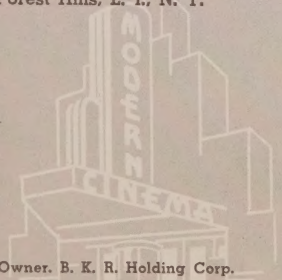
THE MEN'S SMOKING ROOM is another example of utilitarian simplicity, with the picture of sailing vessels effective against the wall paneling of knotted pine.

1940 PRESENTATION No. 6

The New

TRYLON

Forest Hills, L. I., N. Y.



Owner. B. K. R. Holding Corp.

Operator:
United Long Island Theatres Corp.

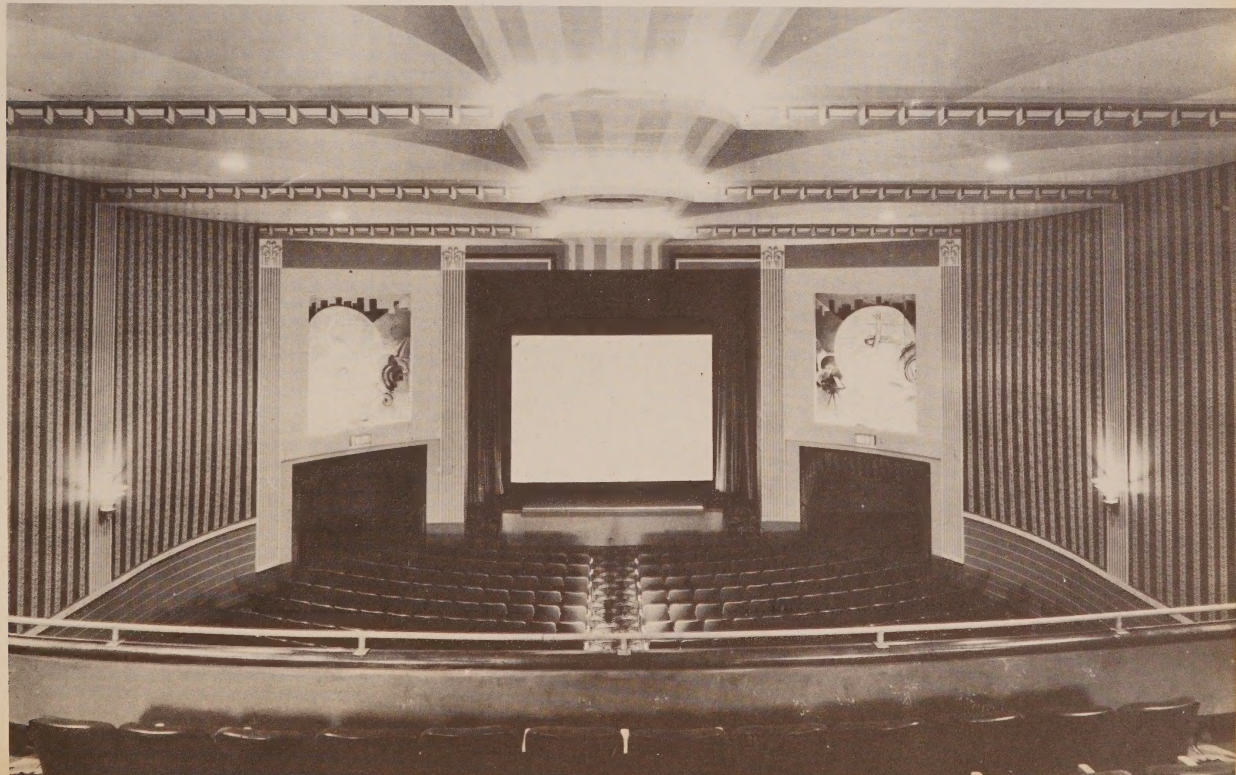
Architect: Joseph Unger

THE FRONT, a sort of inside-out version of Baltimore's Senator Theatre (q.v.), again shows what can be done with stone and glass block in bringing attractive distinctiveness to a theatre. The glass-block tower, inside lighted at night, is the architect's square variation on the New York World's Fair's famed theme.

Theatres not infrequently take their names from nearby places or things or from famous people of the vicinity. What, then, could be more logical for the Interboro Circuit, Inc., when it decided to build a theatre at 9881 Queens Boulevard, in the Forest Hills section of New York City, than to call it after the past summer's most striking architectural feature in the locality, the Trylon of the New York World's Fair. The resemblance stops there, but the theatre is, nevertheless, no less striking and modern than its namesake, with or without the accompanying Perisphere. Designed by New York's Joseph Unger, the theatre is designed as the central unit of a business development. Notable departure from the customary is the utilization of vertical lines in the auditorium wall design, particularly spiking the erroneous idea that one must have horizontal lines "to aid the eye" in finding the screen.

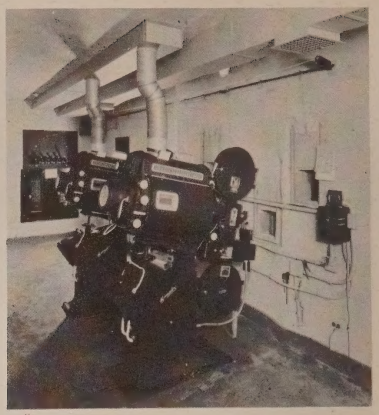
THE AUDITORIUM, looking toward the rear, shows more strikingly the almost circus-tent effect of the prison-striped mural decorative treatment. Shown more clearly here, too, is the ceiling treatment, where segments of lighter color at the corners of each ceiling step complement the segment design in the carpet. Modern wall-bracket lighting fixtures hold the supplementary lights.

THE AUDITORIUM looking toward the screen from the balcony, shows effectively how the under-lighted murals, flanking the proscenium and over the exit areas, are set forth in even greater prominence by the use of the alternately arranged light and dark vertical striping. Note also the treatment of the "risers" in the stepped ceiling. **Maharam wall fabrics were applied over Geo. R. Hall & Sons' rockwool.**



THE PROMENADE is small but nicely appointed, with two potted plants to add the touch of nature that makes the whole world kin. Note also the design of the carpet, which is less prominent, in color as well as in figure size, than that which is used in the more spacious parts of the theatre.

THE STANDEE AREA is spacious and decorated in keeping with the rest of the auditorium, although in a more subdued scheme. The tiled-in drinking fountain is effectively flanked by back-lighted glass brick. The capacious divans offer home-like relaxation while the patrons wait for the break of the show.

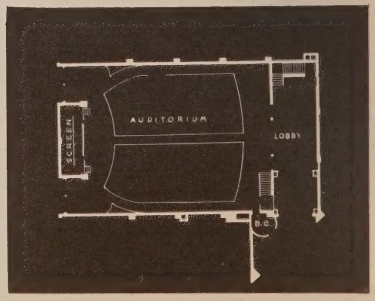


THE BOOTH arrangement allows projectionists plenty of space to work easily and efficiently.

REFERENCE FACTS:

Size of Lot: 56 x 96
Seating Capacity: 600
Cost Without Ground: $100.000.

Acoustical Treatment—Fabric covered walls.
Air Conditioning—Well water system. Installed by Armo Cooling & Ventilating Co.
Carpets—Crestwood. Fan design in brown, tan and red. Manufactured by Alexander Smith & Sons Co.
Chairs—Blue spring edge seat and rust spring back. Manufactured by Ideal Seating Co.
Construction Material—Brick and stone walls steel girders, concrete arch floors gypsteel plank roof, glass brick. Glass brick manufactured by Pittsburgh Plate Glass Co.
Curtain Controls—Vallen. Manufactured by Vallen, Inc.
Decorator—Imperial Art Studios.
Display Frames—Modern walnut. Manufactured by Libman-Spanjer Corp.
Furniture—Satin wood and walnut, trimmed with gold. Black Micota top, rust and gray upholstery. Designed by John Travis, manufactured by M. Singer & Sons.
Generators—Hertner. Manufactured by Hertner Electrc Co.
Lighting Fixtures—Manufactured by Charles Weinstein & Co.
Projection Lamps—Peerless Magnarc. Manufactured by J. E. McAuley Mfg. Co.
Projectors—Super Simplex. Manufactured by International Projector Corp.
Rubber Mats—Red, black and blue. Manufactured by O. W. Jackson Co.
Screen—Walker. Manufactured by Walker-American Corp.
Sign and Marquee—Manufactured and erected by Artkraft Strauss.
Sign Letters—Wagner. Manufactured by Wagner Sign Service, Inc.
Sound—RCA. Manufactured by RCA Mfg. Co.
Supply Dealer—National Theatre Supply Co.
Ticket Register—General Register.



1940 PRESENTATION No. 7

The New
HOLLYWOOD
Sioux Falls, S. Dakota

Owner: L. D. Miller
Architect: Harold Spitznagel

THE EXTERIOR walls are of buff colored face brick with Virginia Serpentine black base and slate coping. Facade of the theatre entrance is blue gray porcelain. Marquee is rectangular, allowing three separate attraction boards. Most attractive on this front is the huge vertical sign, towering high above the side walk to attract patrons from afar.

THE AUDITORIUM is unadorned with lavish decoration and the result has been worth while. The side walls are Kalite acoustical plaster in four shades of tan. Rear walls have been covered with maroon colored Celotex and the ceiling is finished in wine colored plaster. Aisles are heavily carpeted in an attractive shade of pink with a white border.

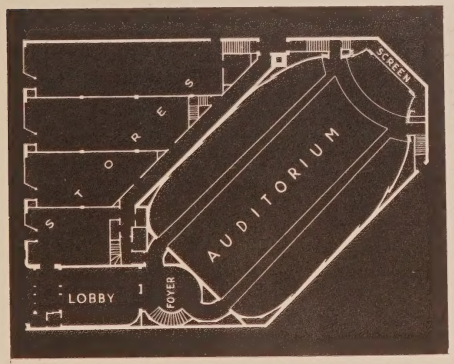
THE POWDER ROOM has for its feature the integration of lighting units with mirrors. Tastefully appointed, this room is well suited to the lady patron.

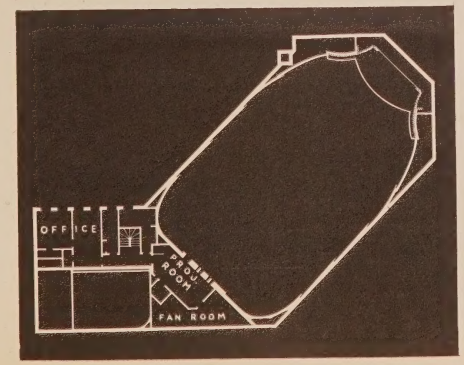
REFERENCE FACTS:

Size of Lot: 100 x 139
Seating Capacity: 786
Cost: Not Available

Acoustical Treatment—Kalite acoustical plaster and Celotex. Kalite manufactured by Certain-Teed Products Corp. Celotex manufactured by Celotex Corp.
Air Conditioning—Refrigeration system, using natural gas fuel, manufactured by Chrysler Corp. Anemostats used for air distribution, manufactured by Anemostat Corporation of America.
Carpets—L. C. Chase Seamloc. Manufactured by L. C. Chase and Co.
Chairs—Gray upholstered back, terra cotta Fabricoid seats, natural birch arm rests. Manufactured by American Seating Co.
Construction Material—Face brick, Virginia Serpentine and porcelain enamel. Porcelain manufactured by Porcelain Products Co.
Curtain Controls—Vallen. Manufactured by Vallen, Inc.
Decoration—Designed and supervised by architect.
Display Frames—Aluminum. Manufactured by Kawneer Co.
Draperies and Stage Curtains—Supplied by National Theatre Supply Co.
Generator—Hertner HIH 50-100 Transverter. Manufactured by Hertner Electric Co.
Lighting Fixtures—The Novelty Co. Cleveland, Ohio.
Projection Lamps—Peerless Magnarc. Manufactured by J. E. McAuley Mfg. Co.
Projection Machine—Simplex E-7. Manufactured by International Projector Corp.
Rubber Flooring and Wall Covering—Manufactured by Goodyear Rubber Co.
Rubber Mats—Manufactured by American Mat Corp.
Screen—Walker white sound screen. Manufactured by Walker-American Corp.
Sign and Marquee—Fabricated and erected by Vent & Canopy Co.
Sign Letters—Adler. Manufactured by Adler Sign Letter Co.
Sound—Western Electric Wide Range.
Supply Dealer—National Theatre Supply Co.
Ticket Register—General. Manufactured by General Register Corp.

THE FOYER has not been lavishly appointed or made unduly ornamental with "ginger bready" decoration. Wainscot and stairrail are of natural finish selected white birch. Plaster walls are maroon and gray with the ceiling of the same combination. Floor carpeting is pink, gray, and blue. The built-in seat, curved with the contour of the wall, is upholstered with a lemon yellow covering.

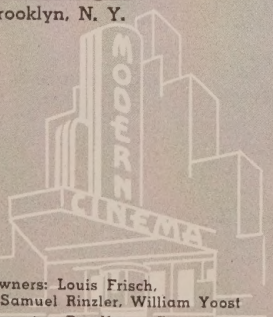




THE LOBBY walls shown have an eggplant colored rubber wainscot. The floor is blue-gray rubber with pink rubber matting. Murals are photographic.

1940 PRESENTATION No. 8

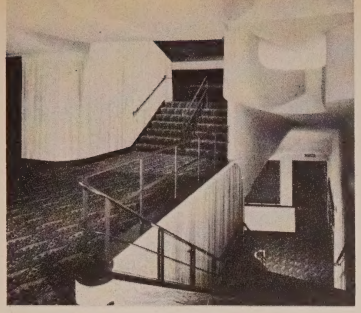
The New
CLINTON
Brooklyn, N. Y.



Owners: Louis Frisch, Samuel Rinzler, William Yoost
Operator: Randforce Corp.
Architect: William I. Hohauser

THE EXTERIOR of this modern deluxe house is of varied colored face brick laid with horizontal tooled joints and trimmed with cream colored terra cotta. The theatre entrance is at the corner of the building and is accentuated by a curved marquee and upright name sign of stainless steel and porcelain enamel. A glass block tower illuminated from behind with mercury vapor reflective lights adds further prominence to this corner of the building.

The new Red Hook low rental housing development, just completed by the New York City Housing Authority in the Red Hook section of Brooklyn, was the incentive for the erection of this neighborhood deluxe house. The housing development, which replaces what were formerly junk and lumber yards and dilapidated buildings, will house 2500 families, all of whom are potential theatre patrons. A large percentage of the residents will be for the most part not yet used to the modern theatres of the day, and there is no question but that they will appreciate and patronize a theatre such as this one placed in their midst.

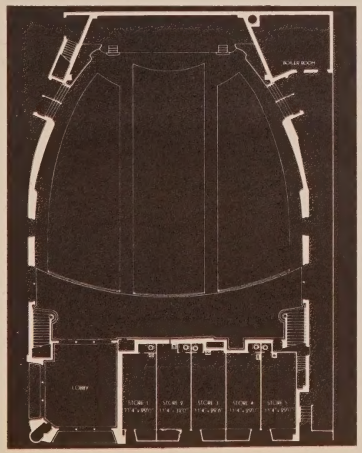


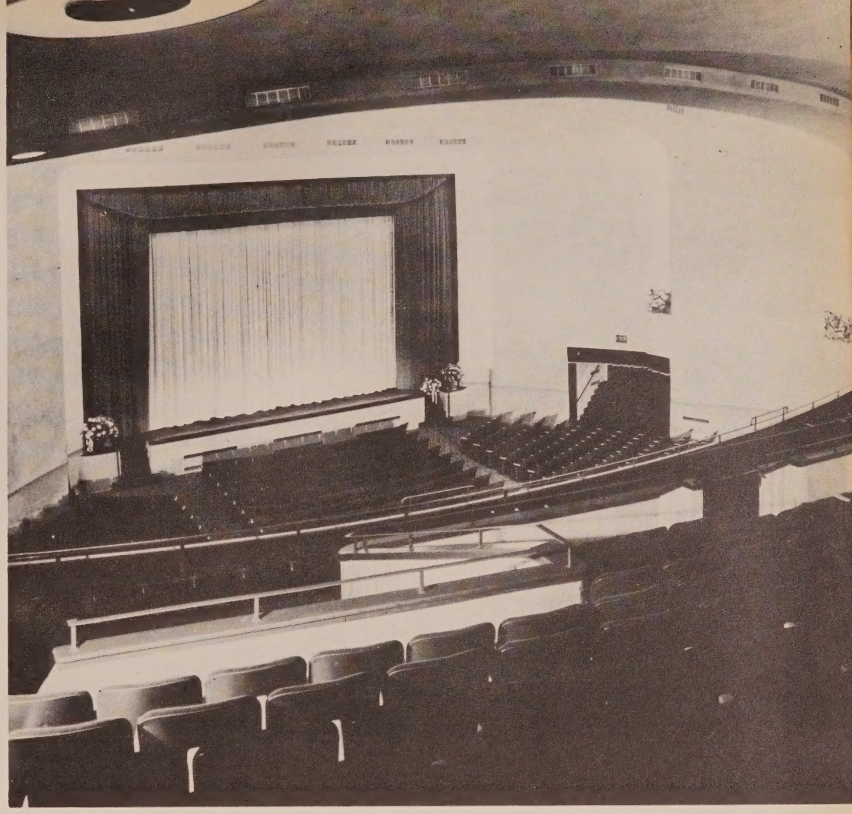
THE STAIRWAY is particularly interesting in its treatment of colored cement wainscoting with graining inlaid. The railings are ornamental wrought iron.

REFERENCE FACTS:

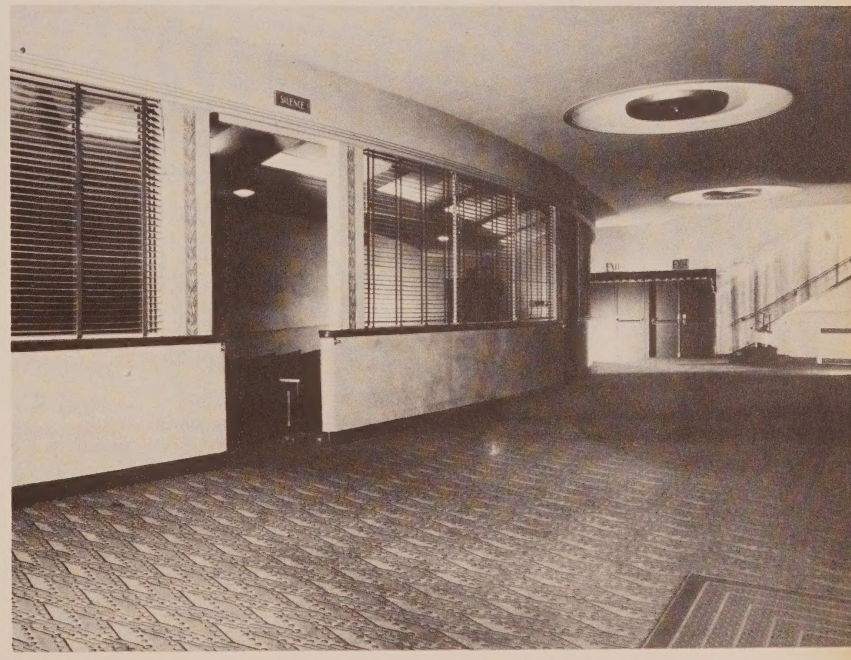
Lot: 140 x 100
Seating Capacity: 1644
Cost: Not Available

Acoustical Treatment—Acoustical plaster. Manufactured by U. S. Gypsum Co.
Air Conditioning—Well water system. Clarage fans and anemostats. Clarage fans manufactured by Clarage Fan Co. Anemostats manufactured by Anemostat Corporation of America.
Carpets—Gulistan. Manufactured by A & M Karagheusian, Inc.
Chairs—Full upholstered back and spring edge seat. Manufactured by Ideal Seating Co.
Construction Material—Varied color face brick, terra cotta, steel and concrete.
Curtain Controls—Vallen. Manufactured by Vallen, Inc.
Decorator—Battisti Studios, Inc.
Draperies and Stage Curtains—Manufactured by Joe Hornstein, Inc.
Generators—Hertner. Manufactured by Hertner Electric Co.
Lighting Fixtures—Manufactured by Charles J. Weinstein & Co.
Projection Lamps—Peerless Magnarc. Manufactured by J. E. McAuley Mfg. Co.
Projection Machines—Super Simplex. Manufactured by International Projector Corp.
Rubber Mats—Manufactured by O. W. Jackson Co.
Screen—Walker white sound screen. Manufactured by Walker-American Corp.
Sign and Marquee—Fabricated and erected by Continental Sign Co.
Sign Letters—Wagner. Manufactured by Wagner Sign Service, Inc.
Sound—Simplex-4-Star. Manufactured by International Projector Corp.
Supply Dealers—Joe Hornstein, Inc. and National Theatre Supply Co.
Ticket Register—General. Manufactured by General Register Corp.





THE AUDITORIUM AND BALCONY are quite spacious and allow a total of 1644 seats with ample spacing back to back. Auditorium spacing is 34 inches, with the balcony spacing being a minimum of 36 inches. All interior lighting is indirect with many beautiful effects being gained by the blending of colors through the dimmers.



THE STANDEE ROOM is partitioned from the auditorium by the standee rail and Venetian blinds. Illuminated "Silence" signs have been placed over the entrance to each aisle to help insure comfortable hearing for those already seated. Anemostats with concealed lighting units have been well placed here for lighting and air conditioning.

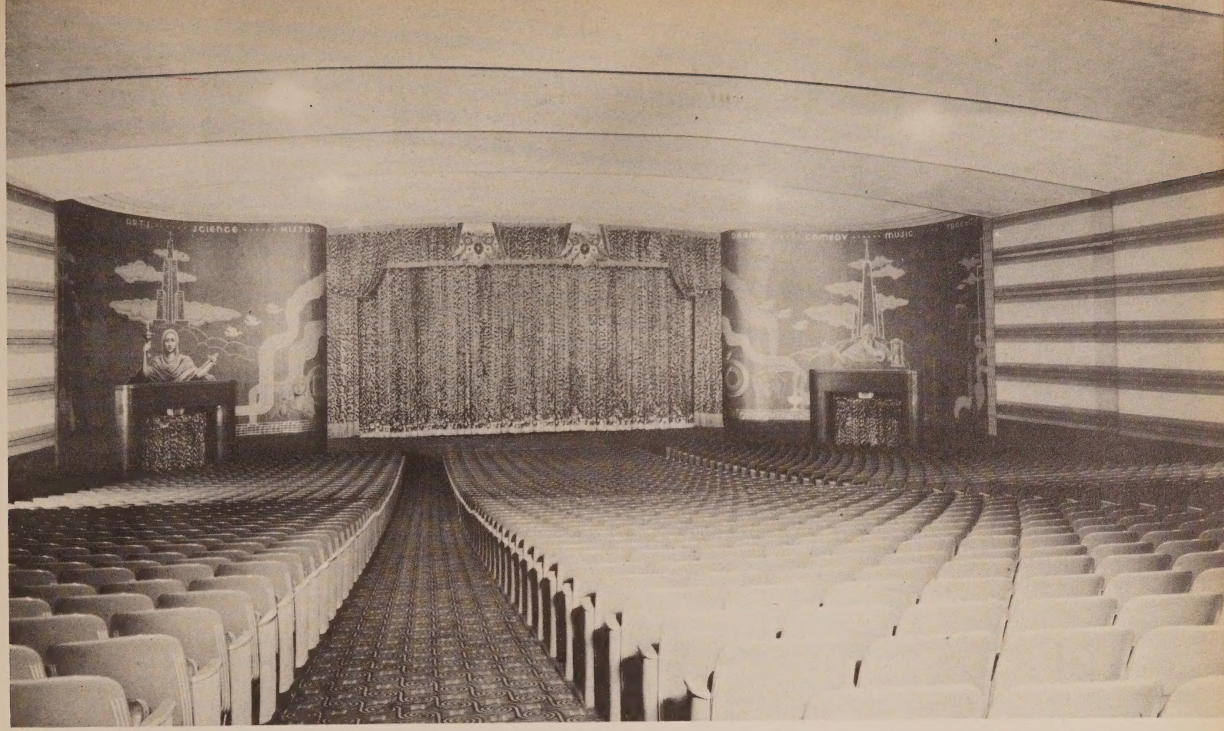
1940 PRESENTATION No. 9

The New
HARPER
Detroit, Mich.

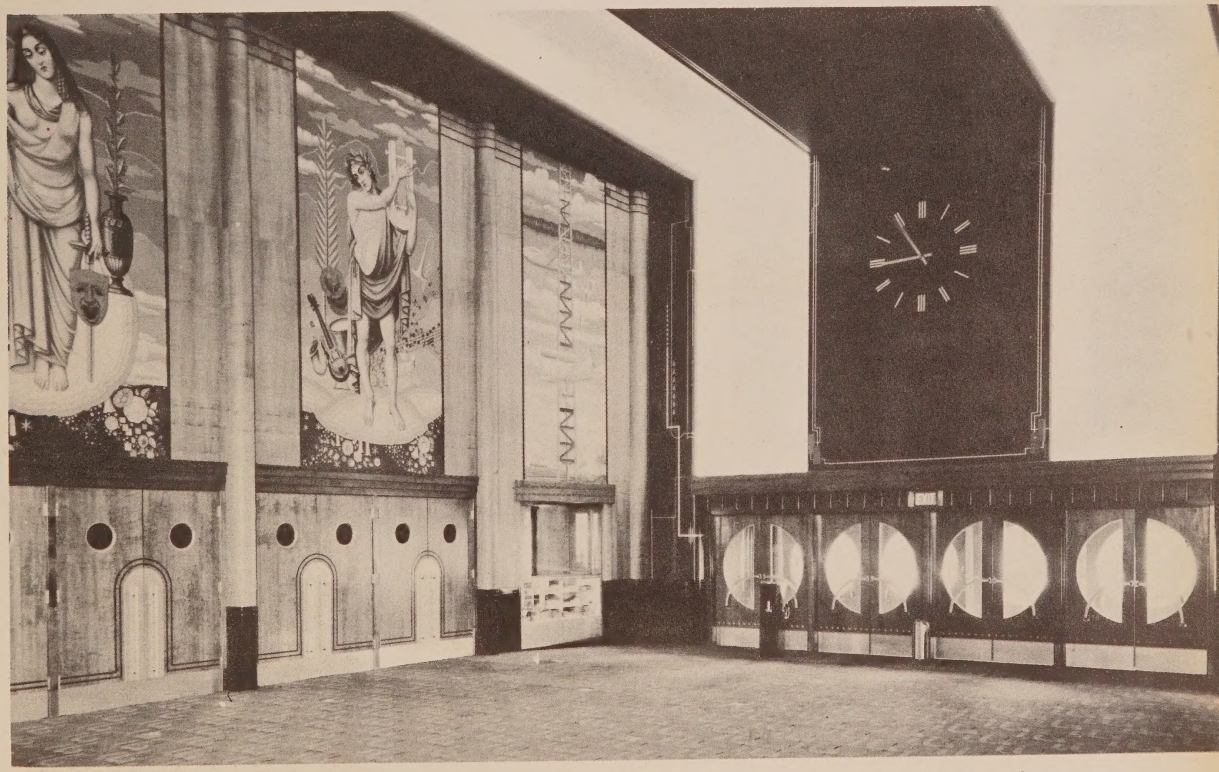
Owner: Wisper & Wetsman
Architect: Charles N. Agree

THE EXTERIOR at night is most impressive. A terra cotta facade enhanced by brilliant signwork has brought startling results. The huge signwork rising to a height of 79 feet above the sidewalk, is composed of three large units—vertical, parapet and marquee. This display is unusually attractive, can be seen for miles in this residential community and dominates its immediate surroundings. The lower portion of the facade, beneath the marquee, is faced with porcelain enamel and stainless steel Macotta.

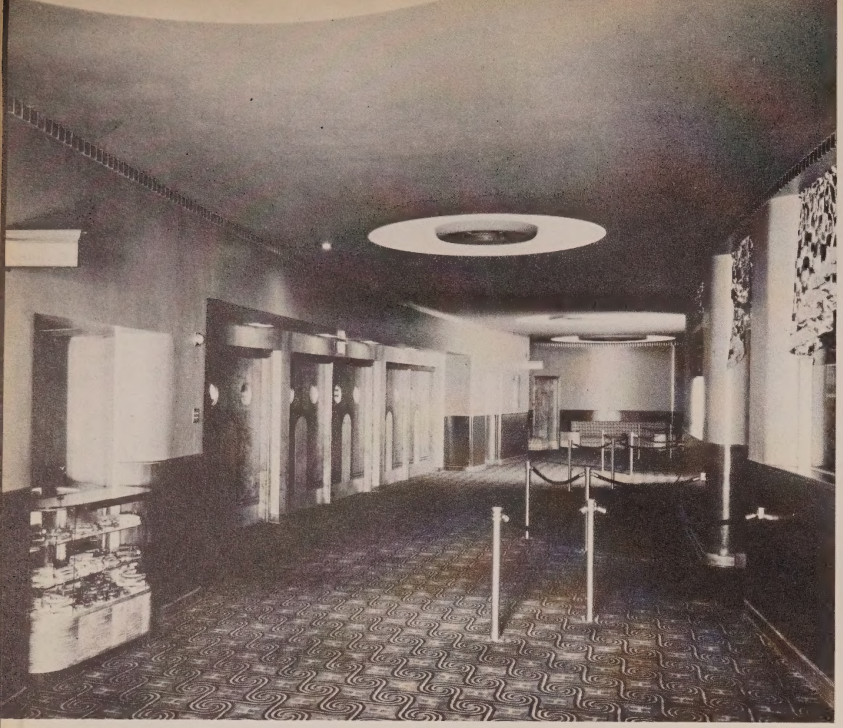
Detroit's architect Charles N. Agree was chosen by Messrs. Wisper and Wetsman, owners of the new Harper Theatre, to plan and design this modern cinema for Detroit's east side residential section. Theatre is the largest modern house to be erected in a Detroit neighborhood community, and the massive structure dominates its immediate surroundings.



THE AUDITORIUM has been artistically decorated but with the exception of the proscenium the amount was moderate. The side walls are of cinder block with painted Acoustone bands for trim. The rear wall, not visible here, is faced with Acoustone painted in tan, brown and gold. The ceiling is of sand finished plaster, painted in a blue.



THE LOBBY, as can be seen, is quite spacious with an unusually high ceiling. Huge murals surmount the exit doors, and cover more than one half the wall elevation. The large clock mounted high on the wall above the street exits is a touch of the modern that should not go unnoticed. The dark field which is the background for the clock runs up to, and across the ceiling.



THE STANDEE ROOM runs the full width of the auditorium. The doors shown are the exits to the lobby. A glass baffle has been mounted on the standee rail as a breaker between the standee and the seated patron.

THE EXTERIOR in daylight does not prove as impressive as the view shown at night, but is still no less inviting. The massiveness of the signwork and its novel pattern is more clearly seen here.

REFERENCE FACTS:

Size of Lot: 100 x 215

Seating Capacity: 1975

Cost Without Ground—Including Equipment: $209,394

Acoustical Treatment—Acoustone Acoustical Tile and cinder block. Acoustone Tile manufactured by U. S, Gypsum Co.

Air Conditioning—System for both summer and winter conditioning. (Equipment not yet purchased.)

Carpets—Crestwood. Manufactured by Alexander Smith & Sons Co.

Chairs—Bodiform. Manufactured by American Seating Co.

Construction Material—Varied colors of face brick and terra cotta, steel and concrete.

Curtain Controls—Vallen. Manufactured by Vallen, Inc.

Decoration—Executed by Thomas Dilorenzo.

Film Table, Cabinets and Rewind—Manufactured by Neumade Products Corp.

Furniture—Manufactured by Brower Furniture Co.

Display Frames—Aluminum. Manufactured by L & T Metal Arts Co.

Lenses—Super Cinephor. Manufactured by Bausch & Lomb.

Lighting Fixtures—Manufactured by Vimlite, Inc.

Lighting, General—Installed by Walker & Co.

Projection Machines—Simplex E-7. Manufactured by International Projector Corp.

Rubber Mats—Manufactured by U. S. Rubber Co.

Screen—Walker white sound screen. Manufactured by Walker-American Corp.

Sound—Simplex 4-Star. Manufactured by International Projector Corp.

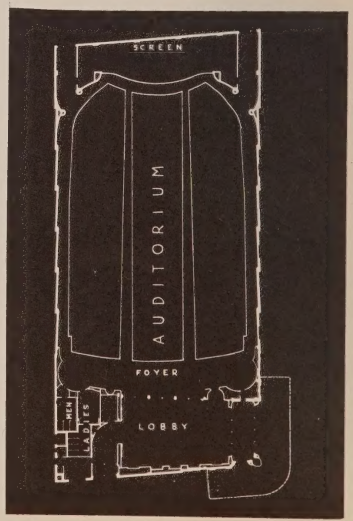
Sign and Marquee—Fabricated and erected by Walker & Co.

Sign Letters—Adler. Manufactured by Adler Sign Letter Co.

Supply Dealer—National Theatre Supply Co.

Ticket Chopper—Manufactured by Newman Brothers.

Ticket Register—Automaticket. Manufactured by General Register Co.

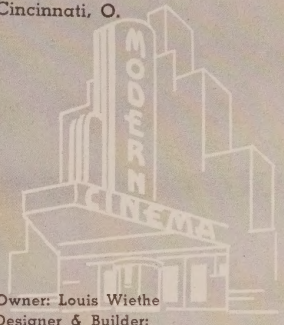


THE EXTERIOR has been finished in face brick and terra cotta. The boxoffice has been recessed from the building line, and balancing this effect on the opposite side of the entrance doors is a bank of glass block as the building angle. The display frames are stainless steel.

Of recent construction in Cincinnati, Ohio, was this 900 seat deluxe house, designed and constructed by F & Y Building Service for Louis Wiethe, owner and operator. Located at Sunset and Glenway Avenues in an area where the approximate patron draw is 40,000 with the general and economic character of the population being divided between middle class workers and business men. The house fronts on a street boasting of only a narrow sidewalk, but genius of design has overcome this handicap and none of the attractiveness of the exterior has been lost. Many new features in theatre design have been incorporated in the project. Both owner and designer should be proud of the result.

1940 PRESENTATION No. 10

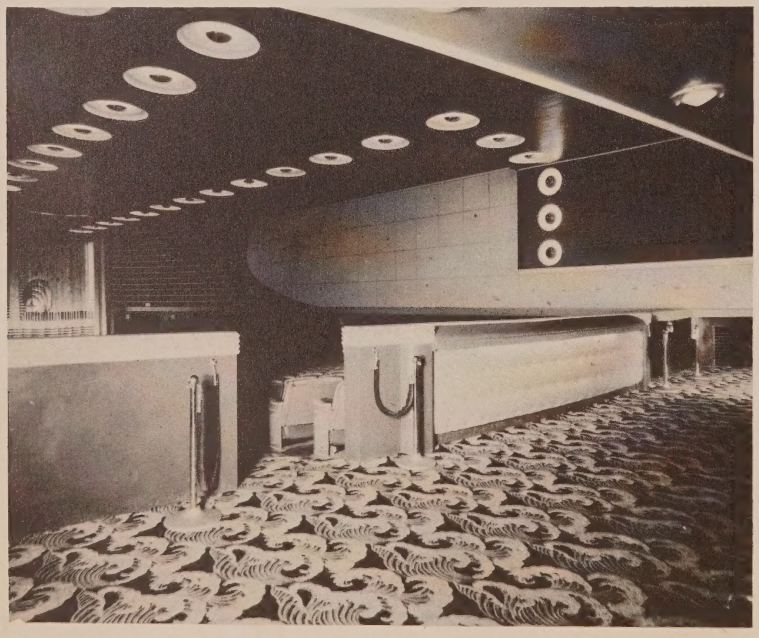
The New
WESTWOOD
Cincinnati, O.



Owner: Louis Wiethe
Designer & Builder:
F & Y Building Service

THE EXTERIOR at night, is much more brilliant than in the daytime, result of excellent illumination. The vertical name sign has a maroon border trimmed in yellow porcelain with stainless steel channel letters. The marquee is in Indian red and buff with the nose at the apex painted blue.

THE AUDITORIUM looking toward the proscenium. The side walls are Neo-Moderne with Greek Doric curves. To effect this design, Indian red velour with painted wood mouldings were used. The proscenium is simple in design and is gayly adorned with beautiful hand-painted, plush curtains. The ceiling is in three levels with the center a field of delft blue and the outer portion in bright orange.



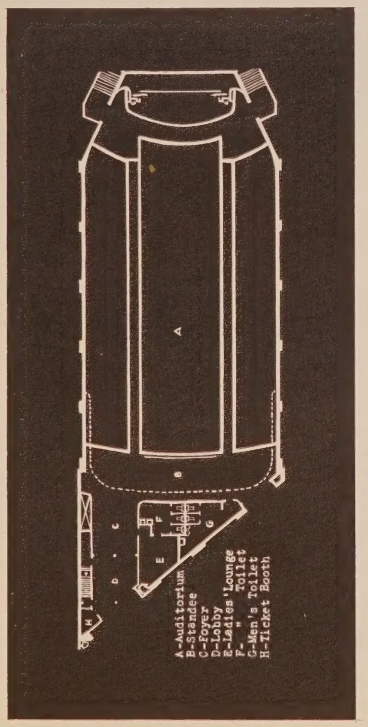
THE STANDEE ROOM, showing a direct view of the standee rail. The rail is plaster over masonry with wood cap. The center section is in tuffed upholstered, highly padded Naugahyde. Here is gained a better view of the side wall treatment. The light field is covered in Naugalite imitation leather stretched into squares. This travels along the top of the wainscot completely around the rear of the house.

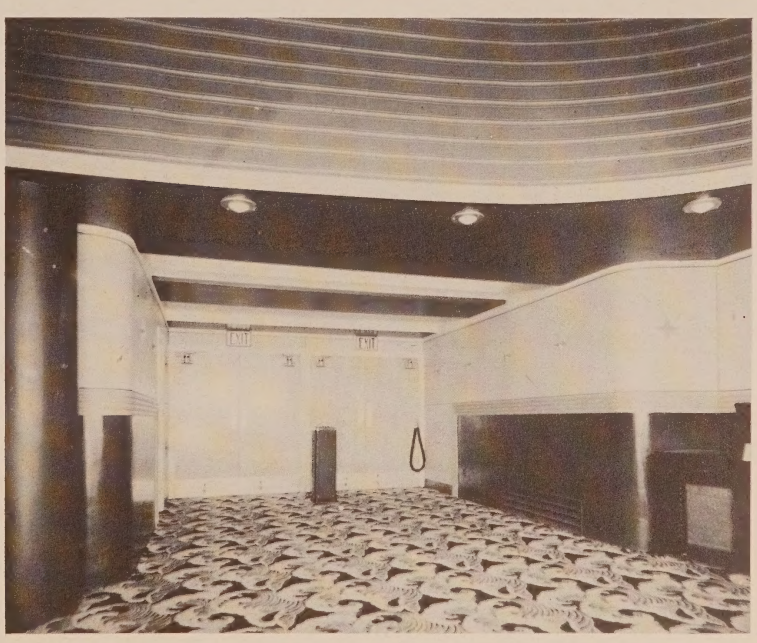
REFERENCE FACTS:

Seating Capacity. 900
Cost Without Ground: Approximately $70,000

Acoustical Treatment—Velour, damask and Naugalite over Kimsul acoustical material. Kimsul Manufactured by Kimberly-Clark. Naugalite manufactured by U. S. Rubber Co.
Air Conditioning—Refrigeration system. General Electric Compressors.
Carpets—Blue, gold and cream. Manufactured by Mohawk Carpet Mills, Inc.
Chairs—Blue mohair back, and black imitation leather covered rubber seat. Manufactured by International Seat Corp.
Construction Material—Face brick, terra cotta, steel concrete and glass block.
Curtain Controls—Vallen. Manufactured by Vallen, Inc.
Draperies and Stage Curtains—Manufactured by F & Y Building Service.
Furniture—Manufactured by Heywood-Wakefield Co.
Generators—Manufactured by J. E. Robin, Inc.
Lighting Fixtures—Manufactured by Business Boosters Equipment Co. and Voigt Co.
Projection Lamps—Brenkert. Manufactured by Brenkert Light Projection Co.
Projectors—Brenkert. Manufactured by Brenkert Light Projection Co.
Rubber Mats—Manufactured by Hamilton Rubber Co.
Screen—Manufactured by Dalite Screen Co.
Sign and Marquee—Fabricated and erected by American Sign Co.
Sign Letters—Wagner. Manufactured by Wagner Sign Service, Inc.
Sound—Manufactured by RCA Mfg. Co.
Supply Dealer—Midwest Theatre Supply Co.
Ticket Register—Manufactured by General Register Corp.

THE AUDITORIUM looking toward the rear. The rear half-cyclorama of the upper portion of the side walls projects approximately 12" wraps around the standee space, and is covered with a delft blue damask with brown and Indian red lines woven in, giving a horizontal sweep to the entire rear portion of the theatre. The Naugalite can be seen here as it travels from one side wall to the other.

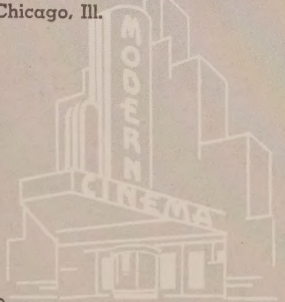




THE FOYER illumination is neon cove. Exit doors are solid birch slab doors of natural finish in a selected grain. The Naugalite leatherette is again used here to good advantage and as the foyer is actually a part of the standee room it helps carry the treatment of the rear wall in a sweeping movement around the theatre. The ceiling projects at a lower level into the standee space and forms the soffit of the overhanging cyclorama.

1940 PRESENTATION No. 11

The New
TELENEWS
Chicago, Ill.



Owner:
Midwest News Reel Theatres, Inc.
Architect: Shaw, Naess and Murphy

THE EXTERIOR of this newsreel house is of a design typical of that current for this type of theatre. A huge triangular marquee extends well out and across the sidewalk, gaining much attention over the neighboring stores. Prominent in this view is the stainless steel boxoffice with its automatic turnstile. Large built-in display frames allow billing for the numerous features of the current news and added short subjects.

In recent years the motion picture industry has seen the advent of newsreel theatres. These houses screen the industry's weekly newsreel output as their feature attraction and fill in with sufficient short subjects of merit to make up a definite program. In most instances, they are of new construction and the idea of a turnstile to replace the doorman has come into being. Because of the location of these theatres in the high rental districts, most designers have incorporated a small front into the building, leasing adjoining stores to cut overhead. Pictured here is just such a house designed by Shaw, Naess and Murphy for Midwest Newsreel Theatres, Inc., of Chicago.

THE AUDITORIUM is small as is usual with most newsreel houses. A balcony with a capacity of approximately 150 capably handles the first floor overflow. Simple in its decoration the sidewalls of this room are of blue green painted plaster. The rear wall is acoustical treated and in the natural color of the material. The lighting fixtures are brass and were designed especially for this house.

REFERENCE FACTS:

Seating Capacity: 606

Air Conditioning—Refrigeration system, Compressors manufactured by Westinghouse Electric Co.

Carpets—Special design. Manufactured by Marshall Field & Co.

Chairs—American Bodiform. Two types used. 404 with padded backs, Nukraft (latex hair decking) over the springs and 202 with deluxe spring backs and foam rubber seat decking.

Construction Material—Steel and reinforced concrete.

Curtain Controls—Vallen. Manufactured by Vallen, Inc.

Decorator—Shaw, Naess & Murphy

Display Frames—Special bronze frames.

Draperies and Stage Curtains—Dark plum and black. Manufactured by Lemle Co.

Furniture—Manufactured by Marshall Field & Co.

Lighting Fixtures—Manufactured by Walter G. Warren Co.

Projection Lamps—Peerless Magnarc. Manufactured by J. E. McAuley Mfg. Co.

Projectors—Super Simplex. Manufactured by International Projector Corp.

Rubber Mats—White, black and red. Manufactured by Thomas Maddock.

Rectifiers—G. E. Manufactured by General Electric Co.

Screen—Walker white sound screen. Manufactured by Walker-American Corp.

Sign and Marquee—Fabricated and erected by Whiteway Electric Sign and Maintenance Co

Sign Letters—Adler. Manufactured by Adler Sign Letter Co.

Sound—RCA. Manufactured by RCA Mfg. Co.

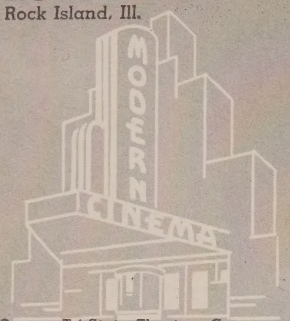
Turnstile—Manufactured by Perey Turnstile Co.

Supply Dealer—National Theatre Supply Co.

THE EXTERIOR at night fully illuminated shows the attractiveness of the signwork and the extent of the exploitation necessary for this type theatre.

1940 PRESENTATION No. 12

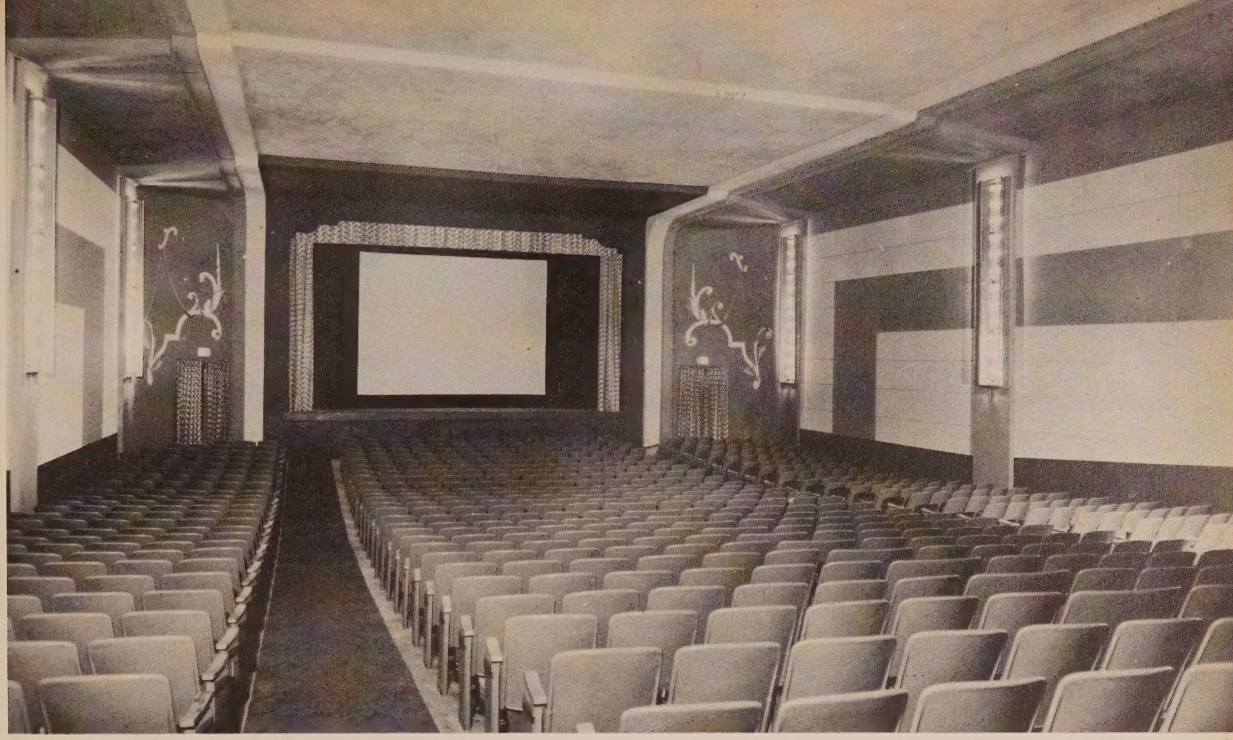
The New
ROCKET
Rock Island, Ill.



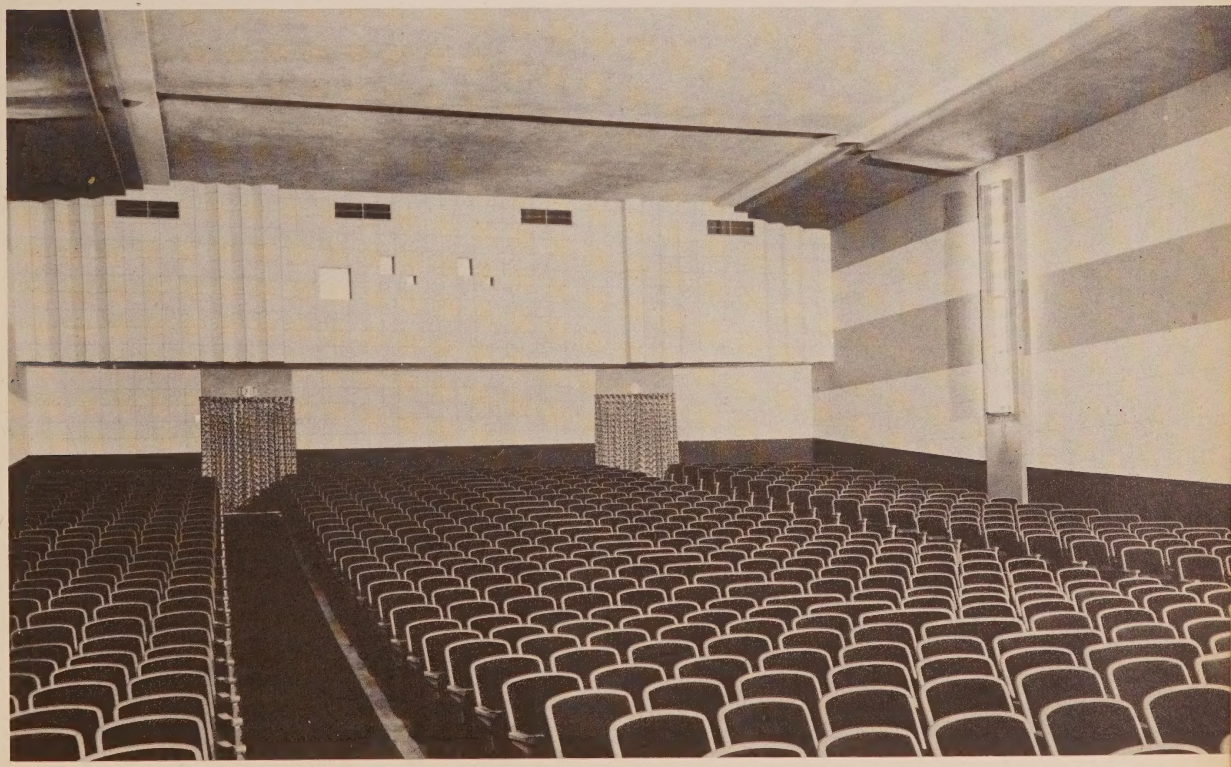
Owner: Tri-State Theatres Corp.
Architect: Wetherell & Harrison

Modernism, the dominant trend in current theatre building, is well-used as the outstanding feature of this theatre recently constructed in Rock Island, Illinois. Seating 800, this neighborhood house has been received with extremely favorable comments by its local patronage. The house was designed by Wetherell and Harrison, architects of Des Moines, Iowa, for the Tri-State Theatre Corporation of Des Moines. It is completely air-conditioned and equipped with the latest developments in theatre comfort and efficiency.

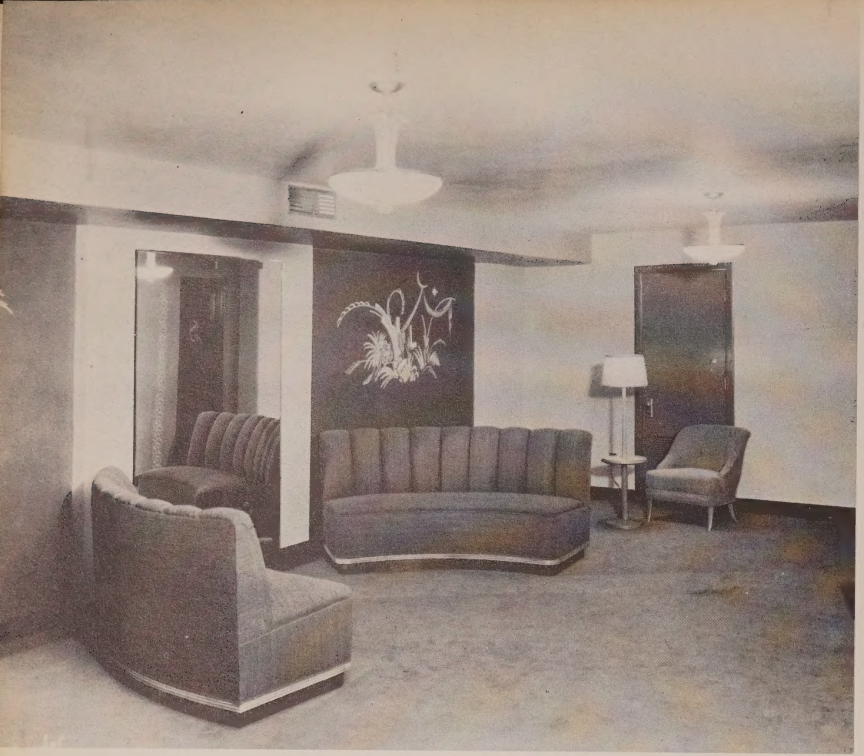
THE EXTERIOR of this deluxe neighborhood house has been designed to good advantage. Finished in green and white glazed tile, it is extremely attractive. Feature of the front is the tower centered over the entrance that carries the theatre name in large neon illuminated letters. Neon chaser lines run around its top as a trim.



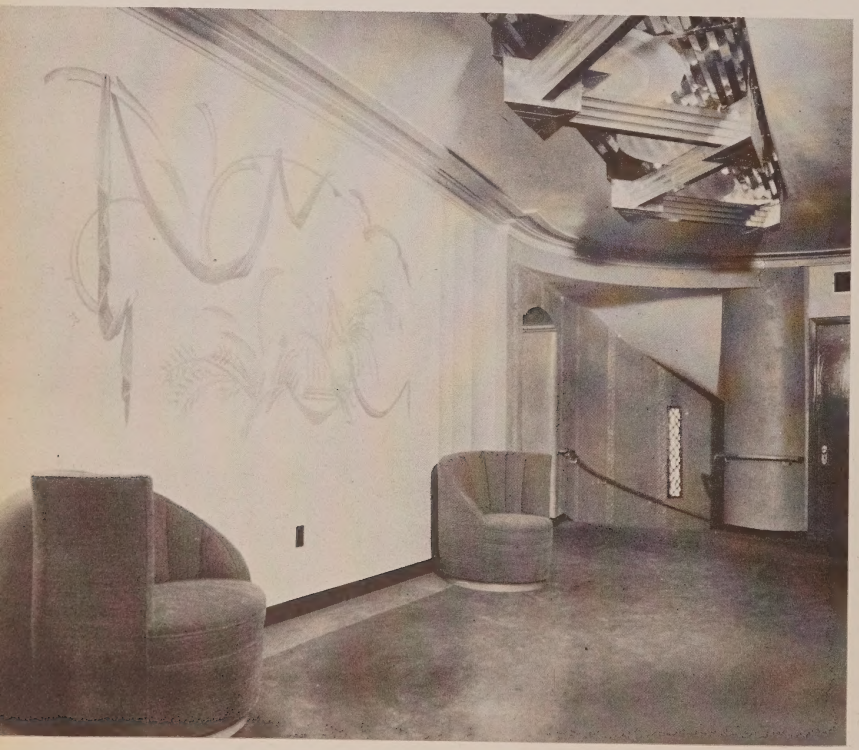
THE PROSCENIUM decoration has been moderate with painting done in subdued colors to enhance vision. The only touch of the artistic here is the painted design on the walls flanking the screen. The stage curtains and exit door drapes are of a gold plush material with a swirl design.



THE AUDITORIUM has been thoroughly equipped for acoustical perfection. The rear and side walls being finished in Acousti-Celotex with Nu-Wood for a wainscot. The ceiling has been done in acoustical plaster, painted in varied tones, and stepped to lessen the height of the side walls.



THE LOUNGE which serves both men and women patrons has been exquisitely appointed. Most notable are the specially designed settees placed on either side of the large mirror centered on the side wall. The wall flats flanking the mirror have a dark background with a modernistic floral design.



THE FOYER is the promenade to the auditorium and to the stairs leading down to lounge and restrooms. The two modern pieces of furniture shown, comprise this room's entire furnishings. The modernly themed wall decoration prominent in this view is striking.

THE LADIES' LOUNGE has been furnished in fine taste. The simplicity is noteworthy, for it favors cleanliness.

REFERENCE FACTS:

Size of Lot: 88 x 140

Seating Capacity: 804

Acoustical Treatment—Nu-Wood and Acousti-Celotex. Nu-Wood manufactured by Wood Conversion Company. Acousti-Celotex manufactured by The Celotex Corp.

Air Conditioning—Well water system and coils.

Carpets—Bigelow Lockweave. Manufactured by Bigelow-Sanford Carpet Co., Inc.

Chairs—Insert panel back with rubber cushion. Manufactured by International Seat Corp.

Construction Material—Tile, brick, steel and concrete.

Decorator—Hanns Teichert.

Draperies and Stage Curtains—Gold swirl plush. Manufactured by Younker Brothers.

Furniture—Manufactured by Davidson, Ltd.

Generators—Hertner. Manufactured by Hertner Electric Co.

Projection Lamps—Peerless Magnarc. Manufactured by J. E. McAuley Mfg. Co.

Projectors—Super Simplex. Manufactured by International Projector Corp.

Rubber Mats—Rub-O-Rug. Manufactured by Younker Brothers.

Screen—Walker white sound screen. Manufactured by Walker-American Corp.

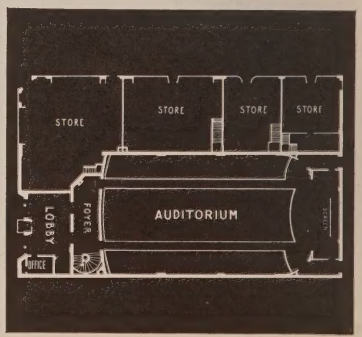
Sign and Marquee—Fabricated and erected by Roy Hansen Lustrolite Co.

Sign Letters—Adler. Manufactured by Adler Sign Letter Co.

Sound—RCA. Manufactured by RCA Mfg. Co.

Supply Dealer—National Theatre Supply Co.

Ticket Register—General. Manufactured by General Register Corp.

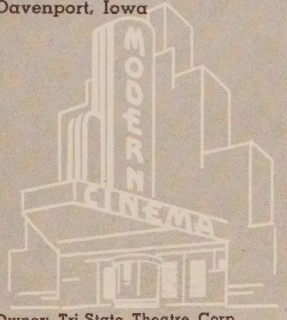


THE PROSCENIUM has been draped with curtains of copper and blue plush in a swirl design. The walls flanking it are fluted to emulate columns, and painted in subdued tones to prevent distraction of attention from the screen. The seating has been arranged on the staggered plan with love seats being used at the end of each row.

THE EXTERIOR has been faced with ivory porcelain enamel with a maroon trim. The new marquee is rectangular in shape and extends the full width of the sidewalk.

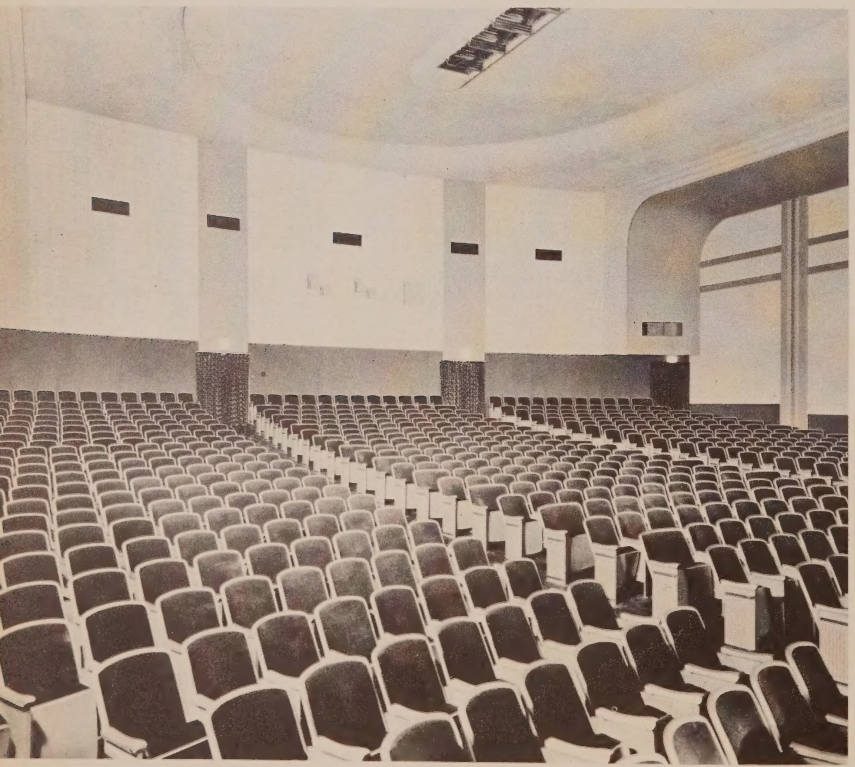
1940 PRESENTATION No. 13

The Renovated
ESQUIRE
Davenport, Iowa



Owner: Tri-State Theatre Corp.
Architects—Wetherel & Harrison

THE SIDEWALLS have been finished with Acousti-Celotex tiles with Nu-Wood panelling for a wainscot. The floral design on the right is the decorative treatment applied to the convex wall adjacent to the proscenium and into which the exit passages have been built.



THE AUDITORIUM, looking toward the rear, affords a splendid view of the seating arrangement. We note in the central bank of chairs, love seats are used on every other row. Something seldom seen in eastern theatres, but applied here, is the draping of the exits.

REFERENCE FACTS:

Size of Lot: 80 x 148

Seating Capacity: 834

Acoustical Treatment—Acousti-Celotex and Nu-Wood. Acousti-Celotex manufactured by The Celotex Corp. Nu-Wood manufactured by Wood Conversion Co.

Air Conditioning—Refrigeration system. Compressors manufactured by Westinghouse Mfg. Co.

Carpets—Red, yellow, black and tan National Crestwood. Manufactured by Alexander Smith & Sons Co.

Chairs—Ivory standards with orange insert panel back and orange mohair covered rubber cushion. Manufactured by International Seat Corp.

Decorator—Hanns Teichert.

Draperies and Stage Curtains—Copper and blue plush in a swirl design. Manufactured by Younker Brothers.

Furniture—Manufactured by Davidson, Ltd.

Generators—Hertner. Manufactured by Hertner Electric Co.

Lighting Fixtures—Manufactured by Modern Lighting and Manufacturing Co.

Projection Lamps—Peerless Magnarc. Manufactured by J. E. McAuley Mfg. Co.

Projectors—Super Simplex. Manufactured by International Projector Corp.

Rubber Mats—Rub-O-Rug. Manufactured by Younker Brothers.

Screen—Walker white sound screen. Manufactured by Walker-American Corp.

Sign and Marquee—Fabricated and erected by Boy Hansen Lustrolite Co.

Sign Letters—Adler. Manufactured by Adler Sign Letter Co.

Sound—RCA. Manufactured by RCA Mfg. Co.

Supply Dealer—National Theatre Supply Co.

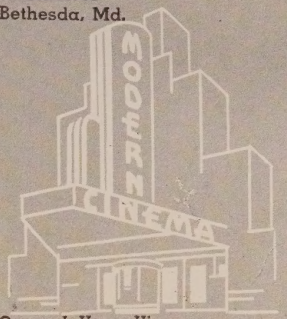
Ticket Register—General. Manufactured by General Register Corp.

THE FOYER is a room that smacks of dignity. Simple in its design, the modern effects created will not age quickly.

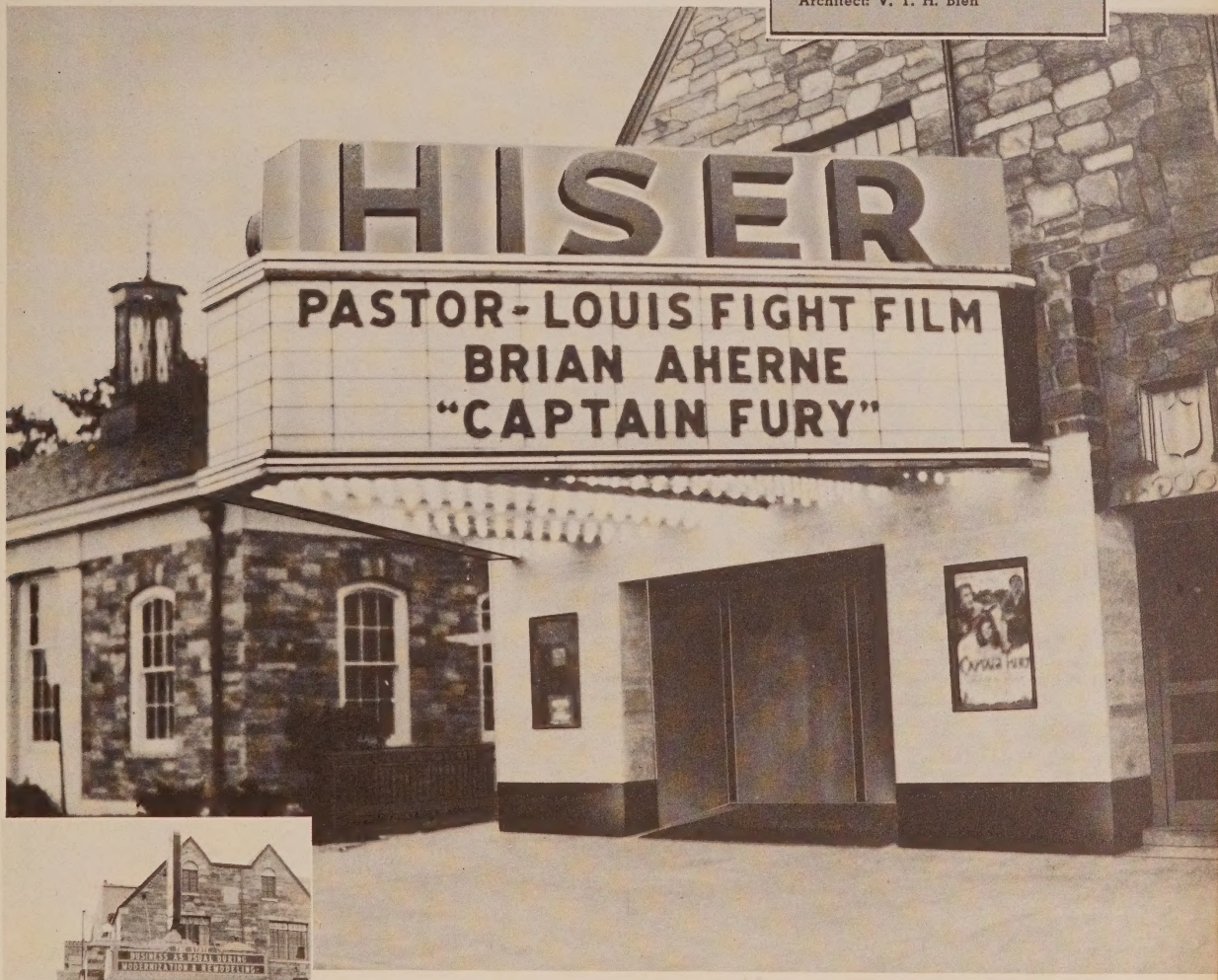
With the renovation of the theatre building, the State Theatre, Bethesda, Maryland, was also rechristened. It now is known as the "Hiser" and gets its name from the owner and operator, J. Henry Hiser. Renovation plans were drawn and executed by Bethesda's architect V. T. H. Bien. Mr. Bien, in drawing his plans, was concerned mostly with the type of people in the community from which the theatre draws. Being professional people of a discriminating class, he felt that while modern in the sense of being up-to-date, the house should be dignified with a quiet and restful atmosphere. That Mr. Bien was successful is quite obvious in the photos shown.

1940 PRESENTATION No. 14

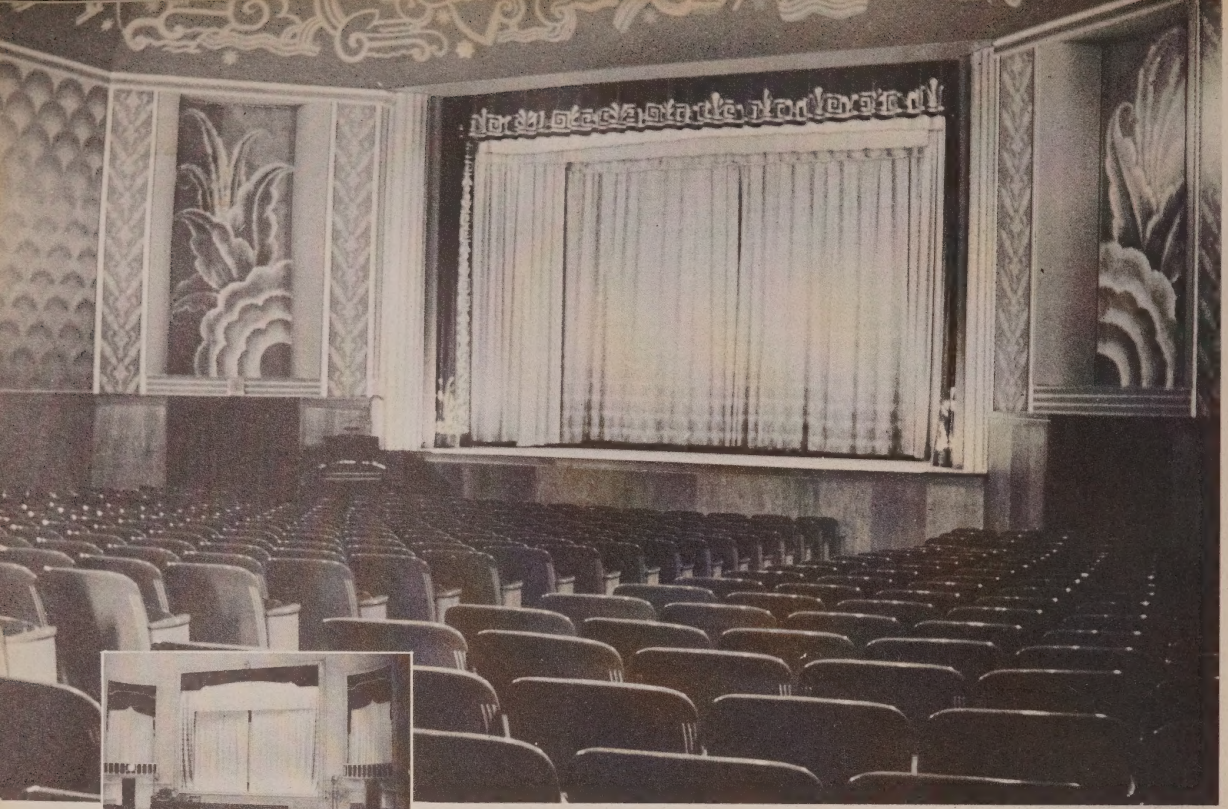
The Renovated
HISER
Bethesda, Md.



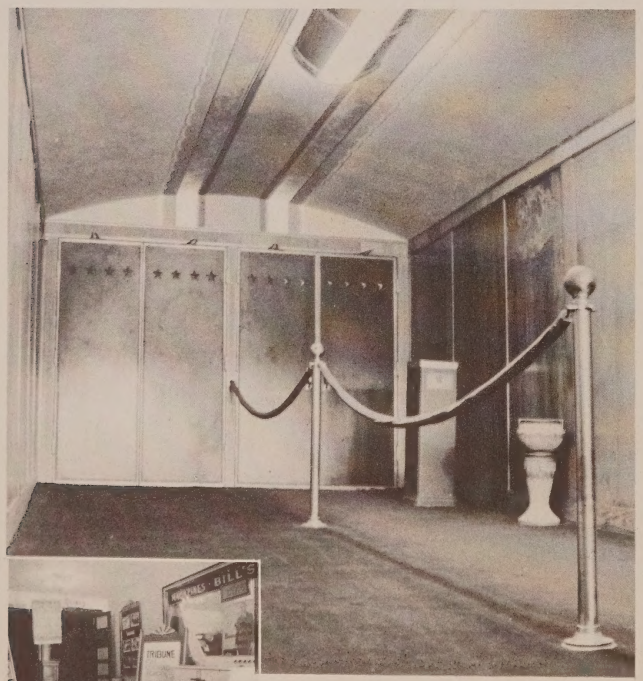
Owner: J. Henry Hiser
Architect: V. T. H. Bien



THE EXTERIOR renovation included a complete change of the theatre entrance. A new triangular marquee with silhouette sign letters and large upright letters for the theatre name, the refacing of the lower facade with Traventine marble, the placing of the boxoffice to one side of the entrance and the balancing of this effect with a display frame on the opposite side were among the changes made. Both box-office and display frame are of extruded bronze. A view of the exterior before the renovation is shown in the inset.



THE AUDITORIUM has been vastly improved both in comfort and overall effect as can be seen in a comparison of the "before" and "after" views shown. New stage drapes, decorative painting, the application of rockwool and damask to the walls all were a part of this extensive renovation. Old veneer panel back chairs were replaced with the modern Bodiform chair.



THE LOBBY has now become a dignified passage way, and is no longer plastered with displays as seen in the "before" view.

REFERENCE FACTS:

Seating Capacity: 500

Cost of Renovation: $35,000

Acoustical Treatment—Damask over rockwool.

Air Conditioning—Refrigeration system. Manufactured by Westinghouse Mfg. Co,

Carpets—National Crestwood. Manufactured by Alexander Smith & Sons Co.

Chairs—American Bodiform. Manufactured by American Seating Co.

Construction Material—New facade of Travertine marble.

Curtain Controls—Vallen. Manufactured by Vallen, Inc.

Decorator—Paramount Decorating Co.

Display Frames—Bronze frames. Manufactured by American Brass Co,

Draperies and Stage Curtains—Manufactured by Paramount Decorating Co. Wall fabrics by Maharam.

Generators—Hertner. Manufactured by Hertner Electric Co.

Lighting Fixtures—Voigt. Manufactured by Voigt Co.

Projection Lamps—Peerless Magnarc. Manufactured by J. E. McAuley Mfg. Co.

Projection Machines—Simplex E-7. Manufactured by International Projector Corp.

Rubber Mats—Manufactured by Potomac Rubber Co.

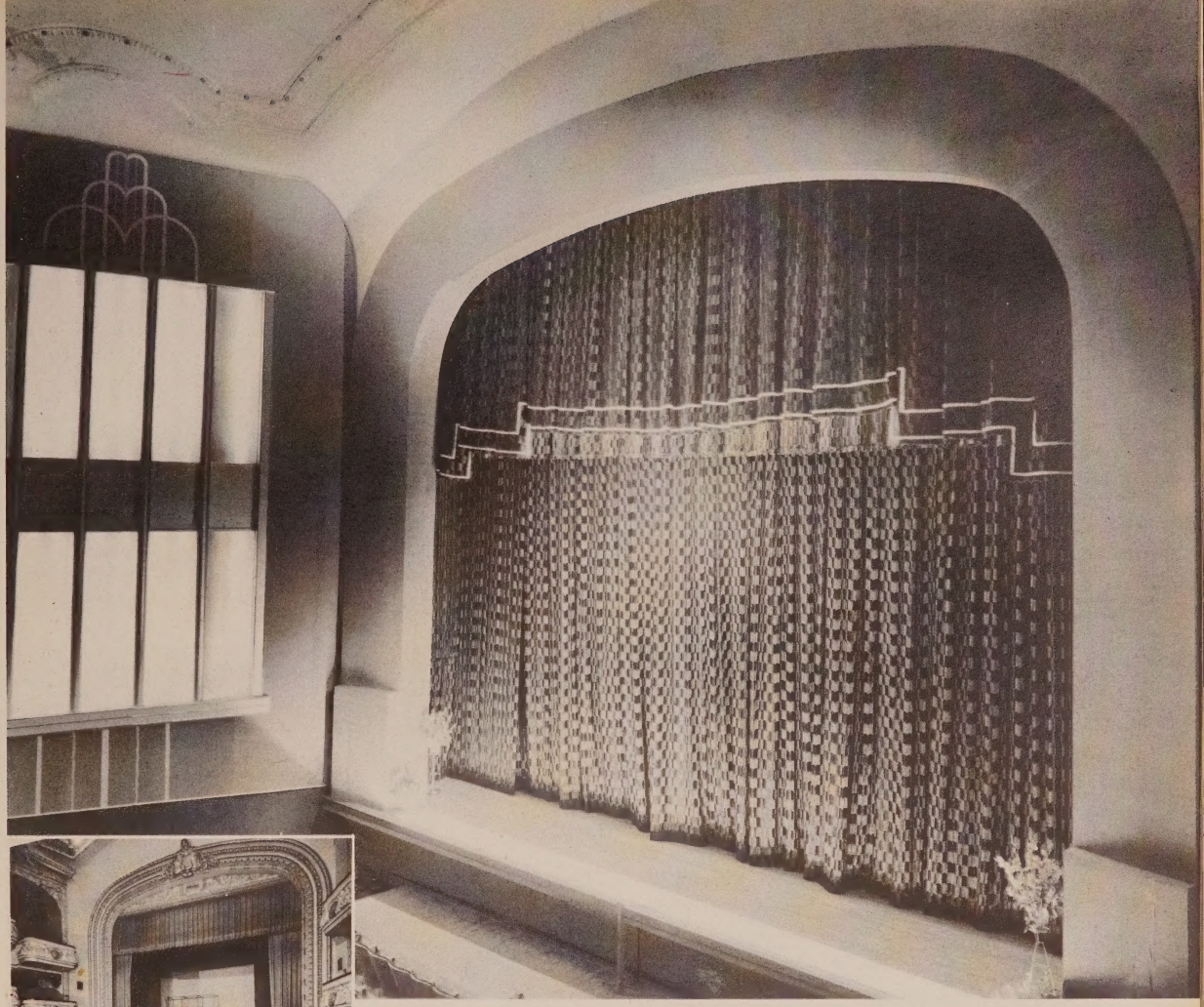
Screen—Walker white sound. Manufactured by Walker-American Corp.

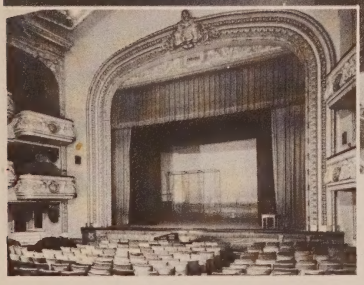
Sign Letters—Adler. Manufactured by Adler Sign Letter Co.

Sign and Marquee—Fabricated and erected by Triangle Sign Co.

Sound—Western Electric Wide Range. Manufactured by Western Electric Co.

Supply Dealer—National Theatre Supply Co.



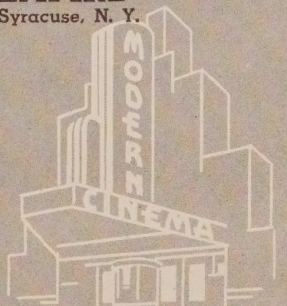


THE PROSCENIUM has been denuded of its ornate trimmings and becomes a modern piece of architecture. This was accomplished by merely covering the ornamental plaster with fabric drawn across a steel frame. To the left of the proscenium, a decorative indirect lighting treatment of recessed, vertical lumiline light troughs worked from the dimmer system, replaces the ornately decorated side boxes shown in the "before" view. Maharam fabrics.

THE OUTSIDE FOYER floor has been newly carpeted and the side walls covered in rose colored Wall Tex with a silver leaf design. The ceiling has been lowered and two modern fluorescent lighting fixtures installed.

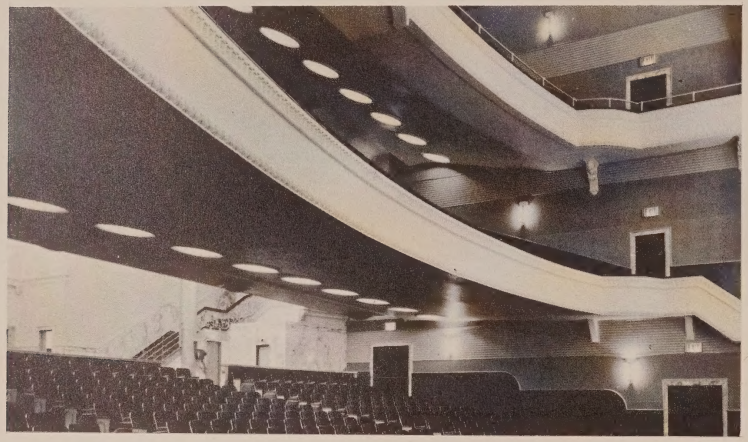
1940 PRESENTATION No. 15

The Renovated
EMPIRE
Syracuse, N. Y.

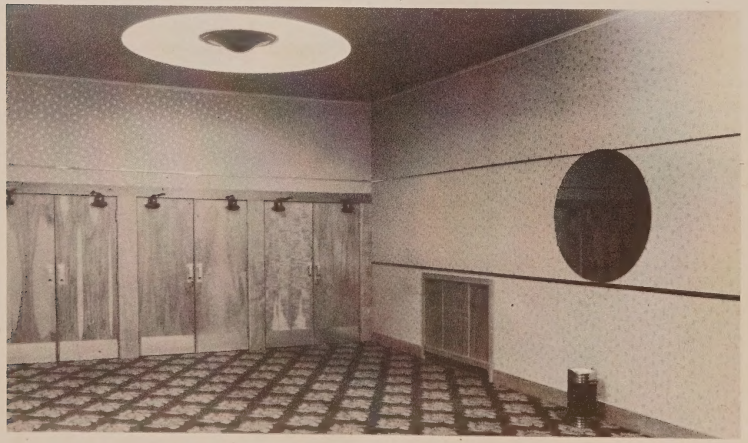


Owner: Mass. Life Insurance Co.
Architect: Michael J. De Angelis

THE LOBBY was completely redone. Ceiling was lowered with Masonite and covered with light blue Wall Tex. Side walls are in paneled birch plywood. Display frames are recessed and illuminated by fluorescent lighting.



THE BALCONY AND AUDITORIUM walls were re-covered with velour and fabric with dividing strips of wood painted in gold. The front of the balconies were painted white.



THE INSIDE FOYER has also been decorated with Wall Tex in a silver leaf design. Carpeting is of the same pattern as the outside foyer.

REFERENCE FACTS:

Seating Capacity: 1600

Cost of Renovation: $35,000

Acoustical Treatment—Velour over rockwool.

Air Conditioning—Refrigeration system. Manufactured by Carrier Corp.

Carpets—Manufactured by A & M Karagheusian, Inc.

Chairs—Irwin Crusader. Manufactured by Irwin Seating Co.

Construction Material—Existing walls.

Curtain Controls—Vallen. Manufactured by Vallen, Inc.

Decorator—Novelty Scenic Studios, Inc.

Display Frames—Manufactured by Stanley Frame Co.

Draperies and Stage Curtains—Manufactured by Premier Scenery Co.

Lighting Fixtures—Manufactured by Lighting Distributor Co.

Projection Lamps—Peerless Magnarc. Manufactured by J. E. McAuley Mfg. Co.

Projection Machines—Super Simplex. Manufactured by International Projector Corp.

Rectifiers—G. E. Copper Oxide. Manufactured by General Electric Co.

Rubber Mats—Tyl-A-Mats. Manufactured by O. W. Jackson Co.

Screen—Dalite. Manufactured by Dalite Screen Co.

Sign and Marquee—Fabricated and erected by General Outdoor Sign Co., of Buffalo.

Sign Letters—Wagner. Manufactured by Wagner Sign Service, Inc.

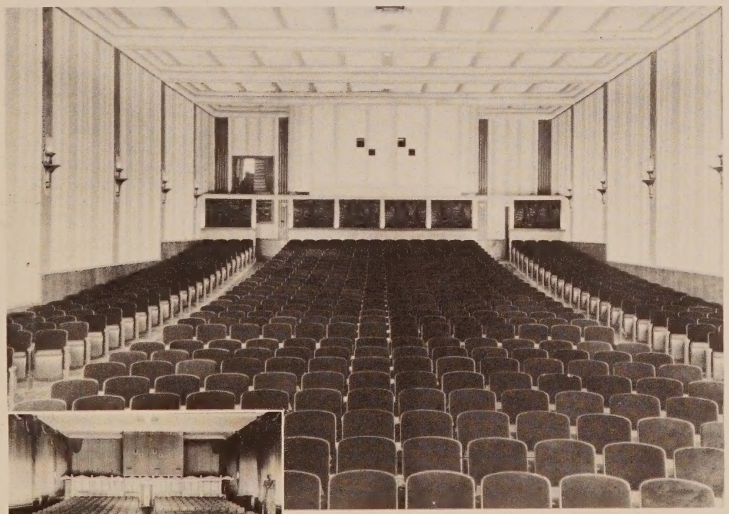
Sound—Simplex 4 Star. Manufactured by International Projector Corp.

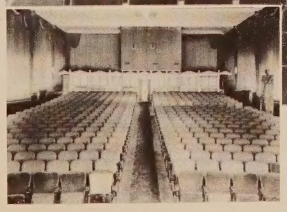
Supply Dealers—National Theatre Supply Co., and United Projector & Film Corp.

Ticket Register—General. Manufactured by General Register Corp.

THE FRONT with its attractive new sign work, is a far cry from its former self.

THE EXTERIOR renovation brought about a colonial style of architecture to the entire front of the building. New stucco was applied and the wood trims were painted in ivory and white. The old marquee was replaced with one of modern design, sufficiently large to fit the increased size of the entrance. To increase the entrance, the decreasing of the size of one store was necessary.



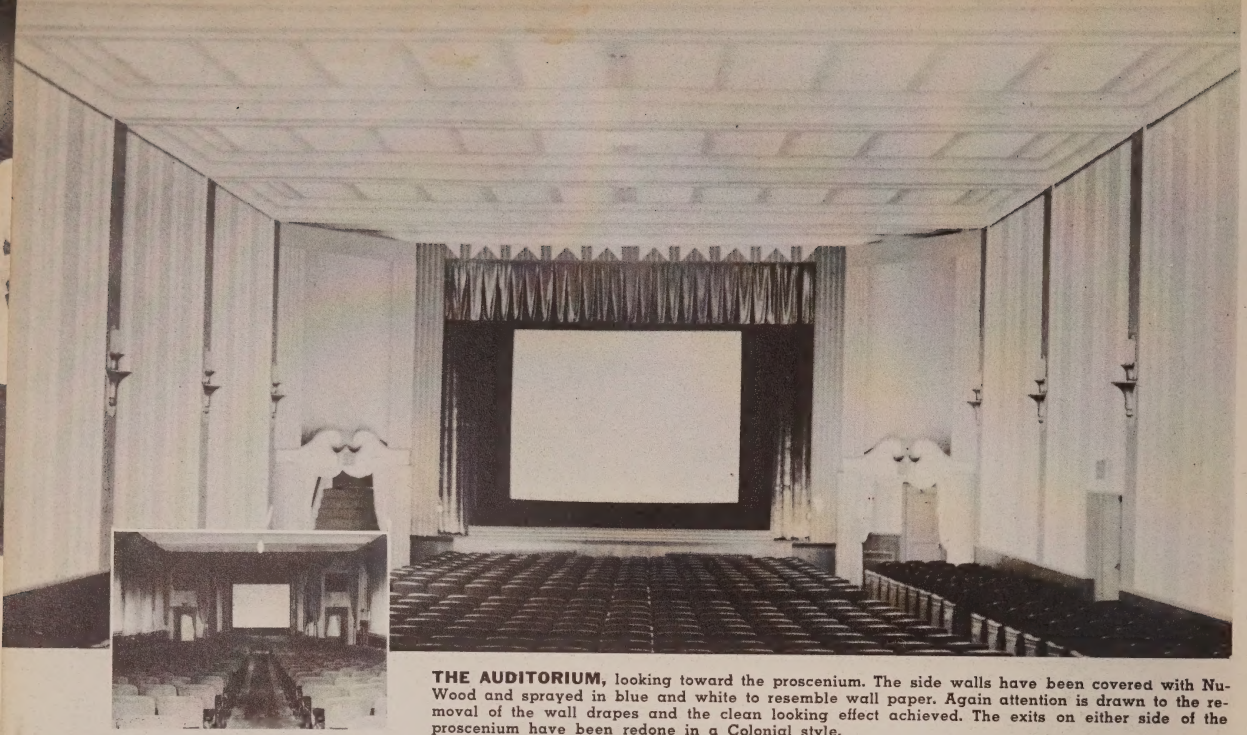


THE AUDITORIUM, looking toward the rear, shows a vast improvement when contrasted to the view of the same portion of the house taken before the renovation was started. Note that the removal of the wall drapes is a decided feature.

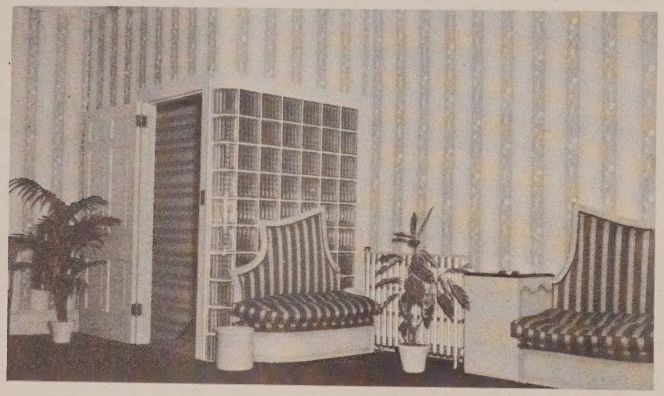
1940 PRESENTATION No. 16

The Renovated
FINE ARTS
Westport, Conn.

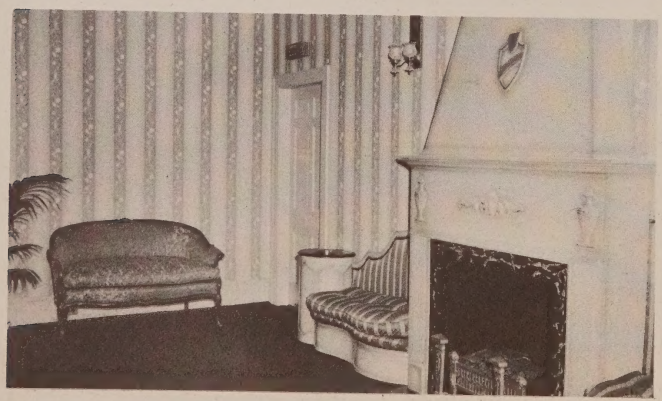
Owner: George Comden
Architect: Krokyn & Browne



THE AUDITORIUM, looking toward the proscenium. The side walls have been covered with Nu-Wood and sprayed in blue and white to resemble wall paper. Again attention is drawn to the removal of the wall drapes and the clean looking effect achieved. The exits on either side of the proscenium have been redone in a Colonial style.



THE LOUNGE was treated in the same manner as auditorium walls with a smaller pattern in proportion to the size of the room being used.



THE LADIES' LOUNGE is more Colonial in design than any other part of the house. The fireplace in the foreground is a most interesting touch.

REFERENCE FACTS:

Size of Lot: 50 x 160

Seating Capacity: 712

Acoustical Treatment—Nu-Wood and Damask over rock wool. Nu-Wood manufactured by Wood Conversion Co.

Air Conditioning—Refrigeration system, Manufactured by York Ice Machine Co.

Carpets—Wilton. Manufactured by Hotel & Carpet Co.

Chairs—Full upholstered rust mohair back and blue leatherette seat. Manufactured by International Seat Corp.

Construction Material—Stucco applied to original framework.

Curtain Controls—A.D.C. Manufactured by Automatic Devices Co.

Decorator—Imperial Studios.

Draperies and Stage Curtains—Manufactured by Imperial Studios.

Projection Lamps—Cyclex. Manufactured by J. S. Ashcraft Mfg. Co.

Projection Machines—Simplex. Manufactured by International Projector Corp.

Rubber Mats—Manufactured by O. W. Jackson Co.

Screen—Dalite. Manufactured by Dalite Screen Co.

Sign & Marquee—Fabricated and Erected by Donnelly Electric & Neon Co.

Sign Letters—Wagner. Manufactured by Wagner Sign Service, Inc.

Sound—Western Electric.

Supply Dealer—Modern Theatre Equipment Corp.

Ticket Register—Manufactured by Nation-Wide Manufacturing Corp.

1940 PRESENTATION No. 17

The New

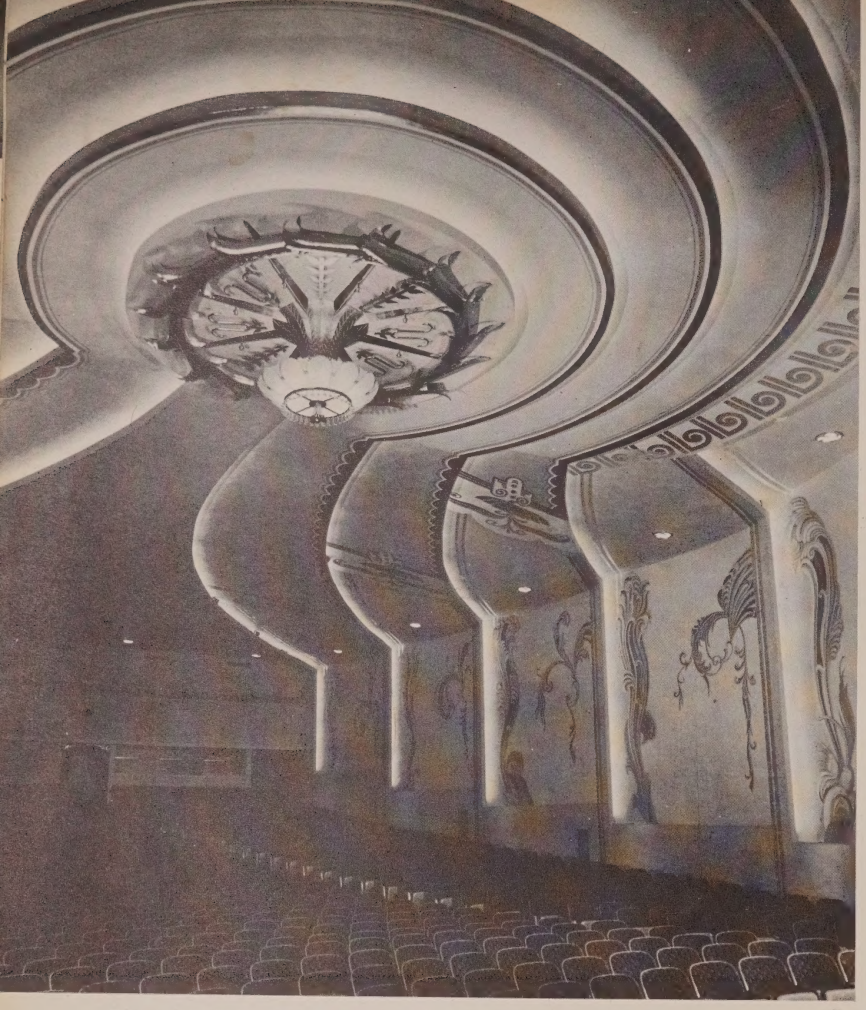
ACADEMY

Inglewood, California

Owner: Fox West Coast Circuit
Architect: S. Charles Lee

THE EXTERIOR as shown in this twilight view is a novel exhibition of architectural originality. A magnificent spiral tower rises heavenward to a height of 125 feet with the outside rim of the spiral fins being illuminated with blue neon. On top of the fins concealed light troughs have been built bringing into play three different colors of lighting. A flasher system sends this lighting up the tower with one color following the other to terminate in a neon spike ball at the very top of the tower. The modernly designed front of the house is 110 feet wide with the huge marquee covering 70 feet of this width.

In Inglewood, California, a delightful suburb of Los Angeles, Fox West Coast Theatres, several months ago, opened this more than delightful deluxe, neighborhood house. Los Angeles architect Charles S. Lee was commissioned by the circuit to design and build the house for them. Much was gambled on the architect's imaginative powers, but as can be seen in this presentation, it was not foolhardy. The originality of design alone puts this house well out in front.



THE AUDITORIUM walls are finished in shades of ochre and carry modernly themed decorations in tones of soft blue, red and gold executed with a fluorescent paint. Particularly effective is the concealed lighting troughs which extend from the wainscot to the ceiling and then form an interesting pattern around the ceiling lighting fixture. In this fixture, the black light bulbs that create the radiation of the fluorescent paint, have been concealed.

THE BOXOFFICE is extra large in scale and is of a beautifully streamlined design. The base is stainless steel and bronze. Plate glass is circular, having been bent to fit the design.

REFERENCE FACTS:

Seating Capacity: 1125
Size of Lot: 100 x 160

Acoustical Treatment — Acoustite walls. Manufactured by Coast Insulating Co.

Air Conditioning—Well water system. Installed by J. Herman Mfg. Co.

Carpets—Saxony weave Mohawk. Manufactured by Mohawk Carpet Mills.

Chairs—American Bodiform with figured velour backs and leatherette seats. Manufactured by American Seating Company.

Construction Material—Concrete, steel and glass block. Glass block manufactured by Owens-Illinois Glass Co.

Curtain Controls—Manufactured by Weaver Mfg. Co.

Decorator—Vogue Studios.

Display Frames—Manufactured by Theatre Specialty Company.

Draperies and Stage Curtains—Manufactured by R. L. Grost Studio.

Lighting Fixtures—Manufactured by Solar Lighting Fixture Co.

Projection Lamps—Peerless Magnarc. Manufactured by J. E. McAuley Mfg. Co.

Projection Machines—Simplex E-7. Manufactured by International Projector Corp.

Rectifiers—GE Copper Oxide. Manufactured by General Electric Co.

Screen—Walker Superwhite. Manufactured by Walker American Corp.

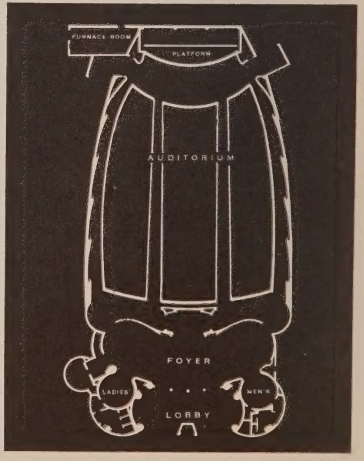
Sign and Marquee—Fabricated and erected by Q.R.S. Neon Corp.

Sign Letters—Manufactured by Larsen Glass Co.

Sound—Simplex 4 Star. Manufactured by International Projector Corp.

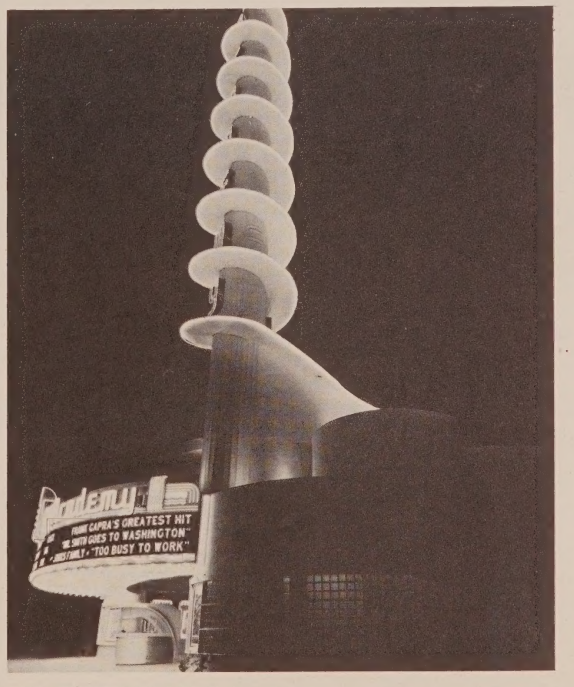
Supply Dealer—National Theatre Supply Co.

Ticket Register—Manufactured by General Register Corp.



THE PROSCENIUM is richly draped, with the main curtain being lifted from the bottom to festoon at the top, as shown here, rather than traveling from side to side in the orthodox manner. The overdraping is in gold and blends with the background color of the walls flanking the stage. The color of the screen masking is burgundy and matches the burgundy colored carpet which covers the stage and steps.

THE LADIES' LOUNGE ROOM is just off the foyer and its entrance-way is draped with heavy curtains with no doors to be opened. A screen with full length mirror hides the view from the foyer. Walls are covered in blonde Avodire wood with walnut trim.



THE TOWER AT NIGHT, fully illuminated, is as attractive as any modern showman would want. A close scrutiny of this photo shows the word "PREVIEW," spelled in large letters running down the tower. This is illuminated only when the house is used for previews.

1940 PRESENTATION No. 18

The New

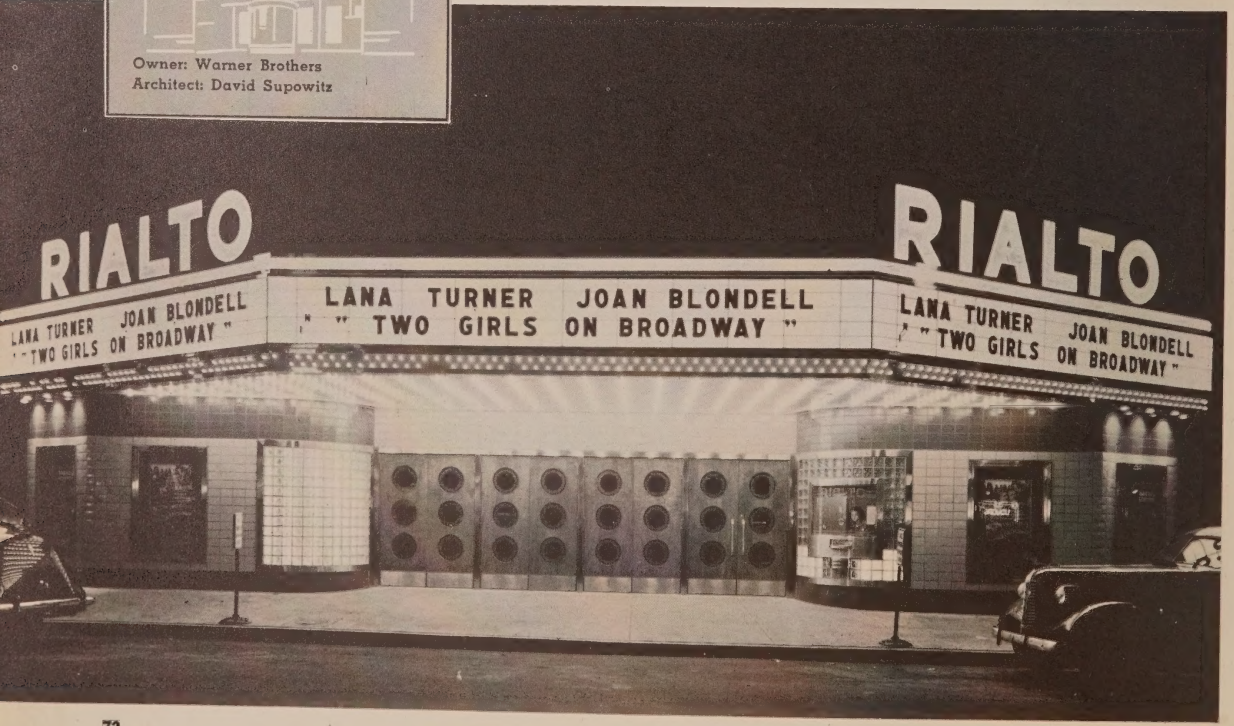
RIALTO

Pleasantville, N. J.

Owner: Warner Brothers
Architect: David Supowitz

THE EXTERIOR has been showmanly designed in a most modern manner. A marquee, which has three sides for silhouette sign letter display, extends the full width of the front. On top of the marquee, at either end, cutout letters with neon illumination spell the theatre name. The facade is covered with blue and white glazed brick.

THE FRONT AT NIGHT has strong show selling possibilities. Plenty of illumination has been thrown into its design and it is by far the most attractive spot in the neighborhood. A well illuminated suffit plus the back lighted glass block which flanks the entrance gives almost daylight illumination to the sidewalk.



THE STANDEE ROOM is large and is used only as a standee space as no furniture is afforded for lounging comfort.

REFERENCE FACTS:

Size of Lot: 84 x 155
Seating Capacity: 900

Acoustical Treatment—Thermax. Manufactured by Northwest Magnesite Co.

Air Conditioning—Deep well water system. Designed and installed by Typhoon Air Conditioning Co.

Carpets — Crestwood. Manufactured by Alexander Smith & Sons Co.

Chairs—Spring edge seat, upholstered back. Manufactured by Ideal Seating Co.

Construction Material—Glazed brick, glass block, structural steel and concrete.

Decorator—Rambusch; Inc.

Draperies, Stage Curtains, Stage Rigging—Manufactured and installed by Charles H. Kenney Studios, Inc.

Generators—Robbins Imperial. Manufactured by Imperial Electric Co.

Lighting Fixtures—Manufactured by Rambusch, Inc.

Projection Lamps—Manufactured by J. S. Ashcraft Mfg. Co.

Projection Machines—Super Simplex. Manufactured by International Projector Corp.

Rubber Mats—Manufactured by O. W. Jackson Co.

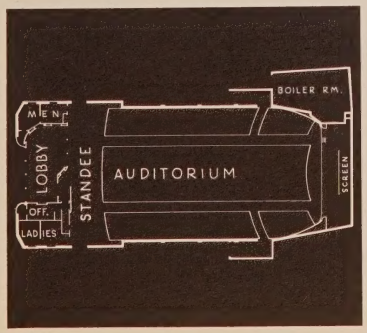
Screen—Hurley. Manufactured by Hurley Screen Co.

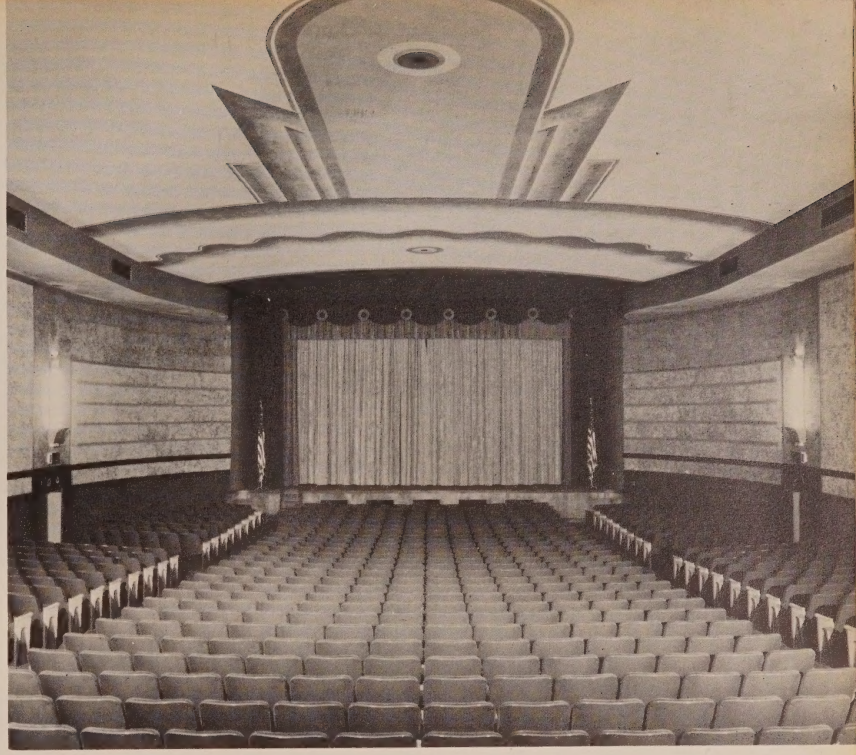
Sign and Marquee—Fabricated and erected by Philadelphia Sign Co.

Sign Letters—Wagner. Manufactured by Wagner Sign Service, Inc.

Sound—RCA. Manufactured by RCA Mfg. Co.

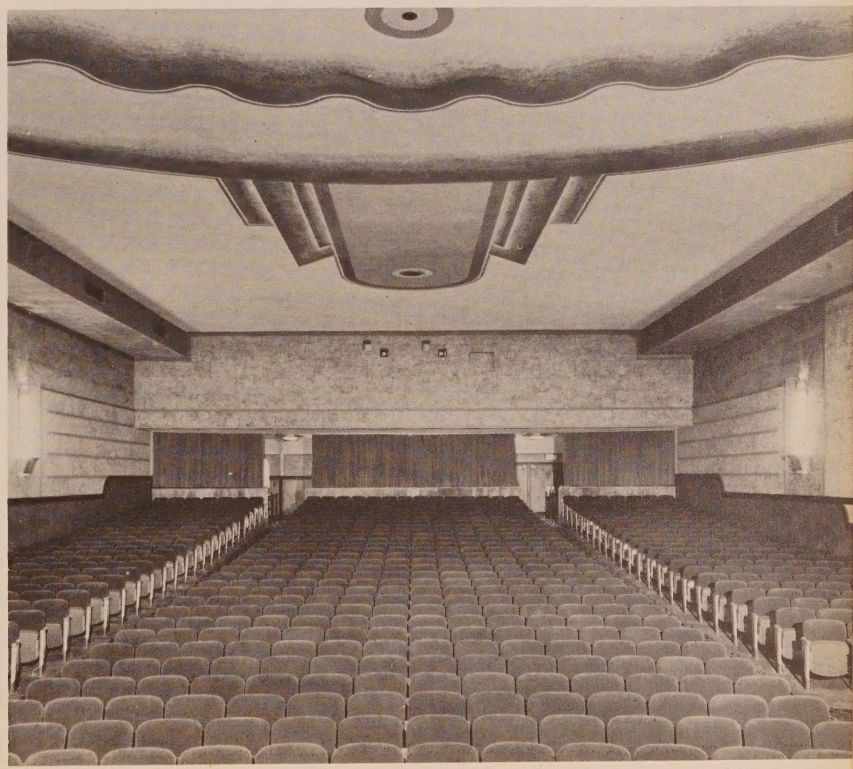
Ticket Register—Manufactured by General Register Corp.





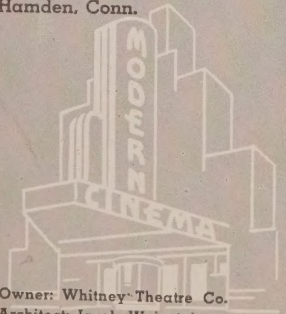
THE AUDITORIUM LOOKING TOWARD THE STAGE is attractive in design. The ceiling decoration has been painted on plain white plaster. The sidewalls are of Thermax with a painted plaster wainscot. Painted wood moulding is used for a trim.

THE AUDITORIUM LOOKING TOWARD THE REAR gives one the opportunity of visualizing the effect created by the use of Thermax as a decorative as well as an acoustical property. Drapes hang from the ceiling at the standee rail for better acoustics.



1940 PRESENTATION No. 19

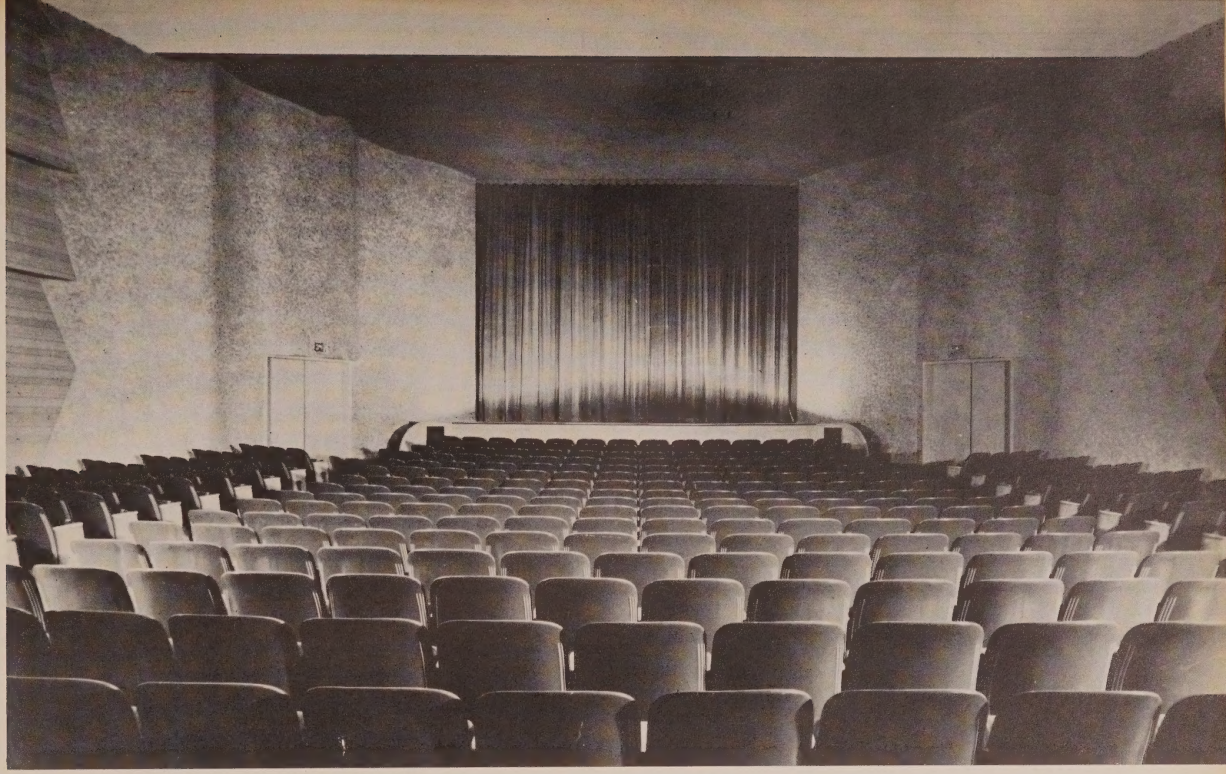
The New
WHITNEY
Hamden, Conn.



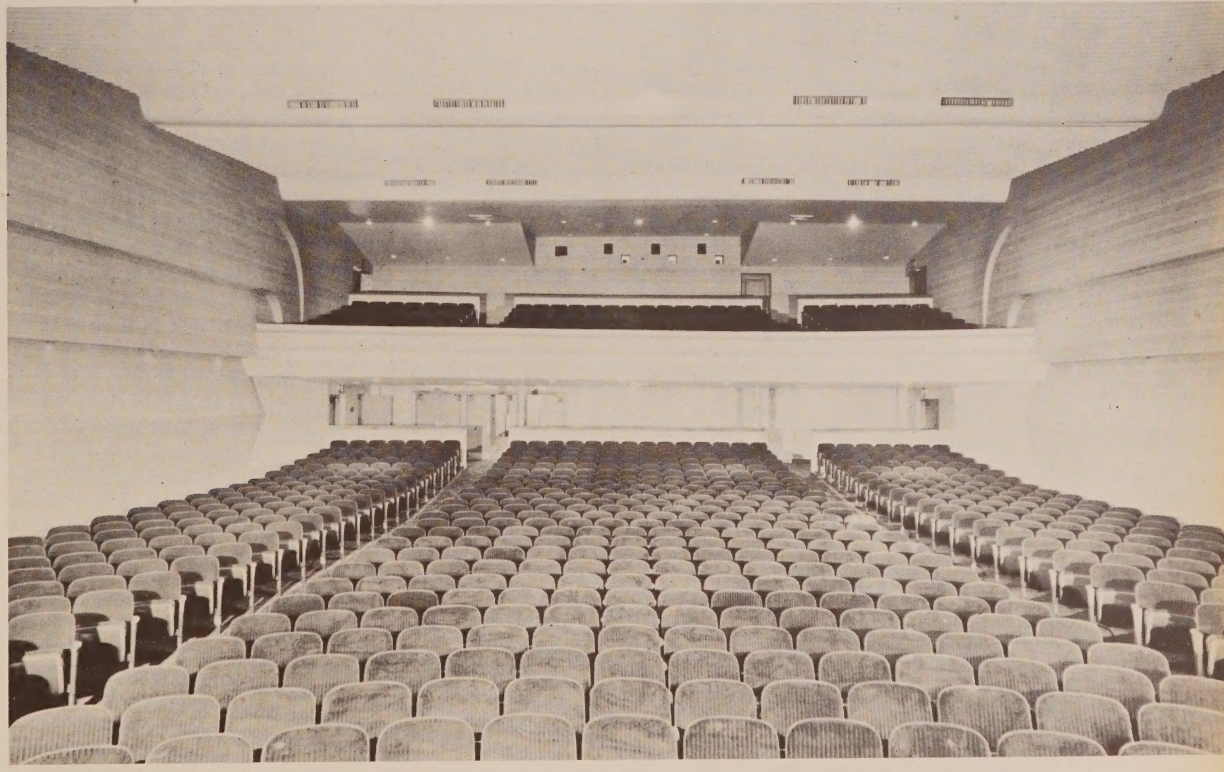
Owner: Whitney Theatre Co.
Architect: Jacob Weinstein
Consultant: Benjamin Schlanger

THE EXTERIOR has been faced with blue and gray Carrara structural glass. The theatre name has been sandblasted into that portion of the glass which covers the tower. The box-office has been built into the design on the left side of the entrance.

Recently opened to the inhabitants of Hamden, Connecticut, was this 950 seat deluxe neighborhood house. House was designed by Hamden architect Jacob Weinstein in collaboration with Benjamin Schlanger, popular New York theatre architect. The site chosen by the owners is on the main thoroughfare of Hamden and is so situated that the approximate patron draw is 6000. Patronage is mostly of the better class.

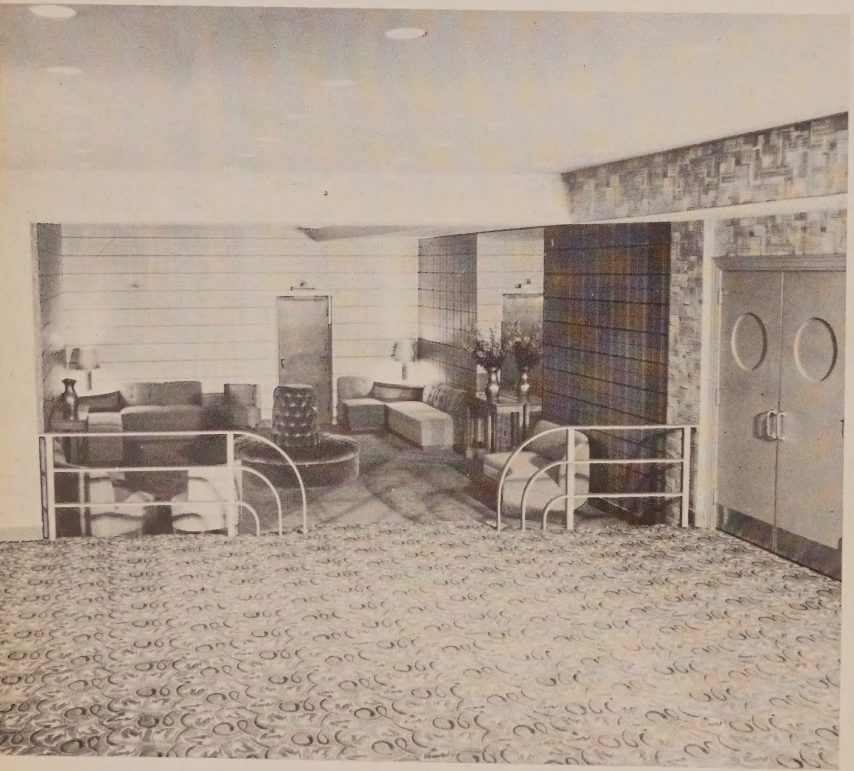


THE AUDITORIUM has been papered with ordinary wall paper in shades of tan. The exception is the ceiling which is painted plaster. The proscenium is perfectly square and is draped with heavy curtains in a deep color to match the painted ceiling directly above it.

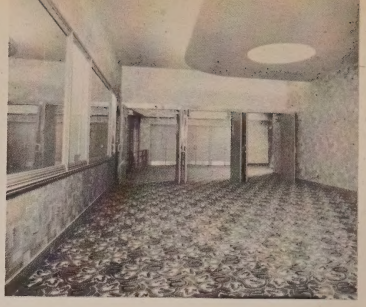


THE AUDITORIUM LOOKING TOWARD THE REAR shows the variation of wall paper patterns used to break up the monotony of design. A small balcony supplies a worth while number of additional seats. A fluted ceiling helps toward better acoustics.

THE EXTERIOR AT NIGHT is brilliantly illuminated by the rectangular marquee. Spotlighting from the top of the marquee is directed at the gray Carrara structural glass immediately above it and calls attention to its modern design.



THE LOUNGE was designed for the complete comfort of the patron. A homey atmosphere was obtained by the use of modern overstuffed furniture and the use of lamps for illumination. This room, like the rest of the house, has its walls papered.



THE LOBBY. Here vari-colored fluorescent lighting reveals the full beauty of rich carpeting, blending in harmony with the copper toned walls.

REFERENCE FACTS:

Seating Capacity: 978

Acoustical Treatment—House was designed for perfect acoustics without the aid of acoustical materials.

Air Conditioning — Refrigeration system. Manufactured by General Electric Co.

Carpets—National Supreme Wilton. Manufactured by Alexander Smith & Sons Co.

Chairs—American Bodiform. Manufactured by American Seating Co.

Construction Material — Brick, Structural steel, concrete and Carrara structural glass. Carrara manufactured by Pittsburgh Plate Glass Co.

Curtain Controls—Vallen. Manufactured by Vallen, Inc.

Decorator—Russata & Son, Inc.

Display Frames — Metal. Manufactured by Stanley Frame Co.

Draperies and Stage Curtains — Manufactured by Bil-Art Studios.

Generators—Hertner. Manufactured by Hertner Electric Co.

Projection Lamps—Peerless Magnarc. Manufactured by J. E. McAuley Mfg. Co.

Projectors Machines—Simplex E-7. Manufactured by International Projector Corp.

Rubber Mats—Manufactured by O. W. Jackson Co.

Screen—Walker white. Manufactured by Walker American Corp.

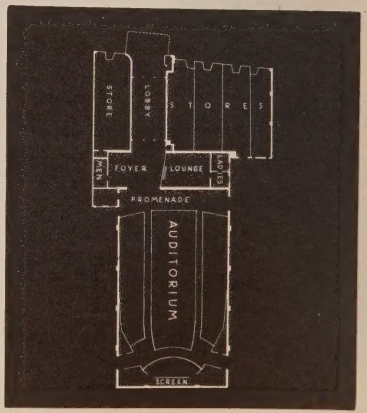
Sign and Marquee—Fabricated and erected by Claude Neon of Conn.

Sign Letters—Wagner. Manufactured by Wagner Sign Service.

Sound—RCA. Manufactured by RCA Mfg. Co.

Supply Dealer—National Theatre Supply Co.

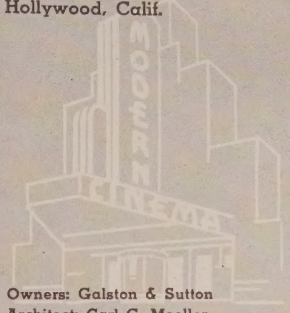
Ticket Register—Manufactured by General Register Corp.



Albert A. Galston and Jay M. Sutton, theatre operators of Hollywood, California have the distinction of being the first to build a class A motion picture theatre in the vicinity of Los Angeles in the past 10 years. This massive structure has attracted much attention through its unique architecture and many innovations. The approximate cost of construction and equipment was $250,000. Theatre was designed by Carl Moeller with Clarence J. Smale as the consulting architect. Both residents of Hollywood, their intimate acquaintance with the type of architecture favored in Southern California helped them considerably in producing a house best suited for its locale.

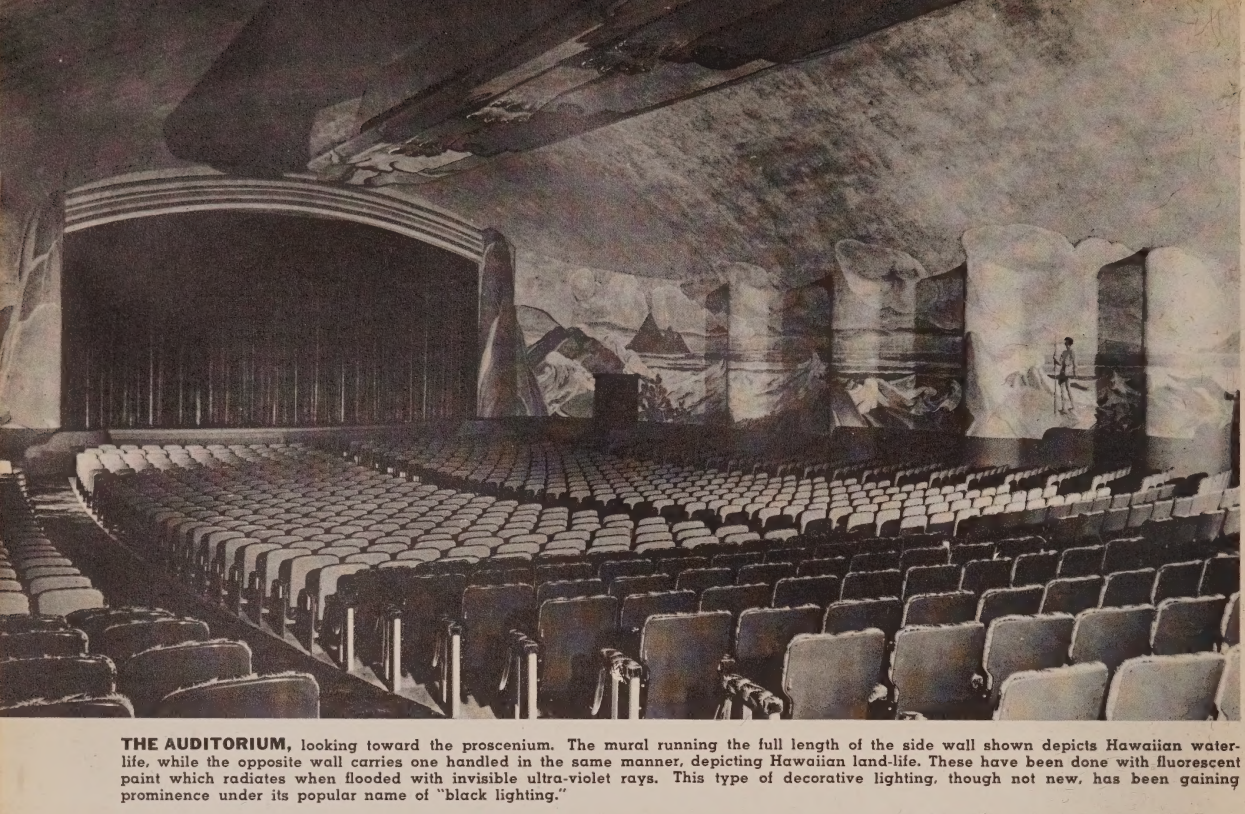
1940 PRESENTATION No. 20

The New
HAWAII
Hollywood, Calif.

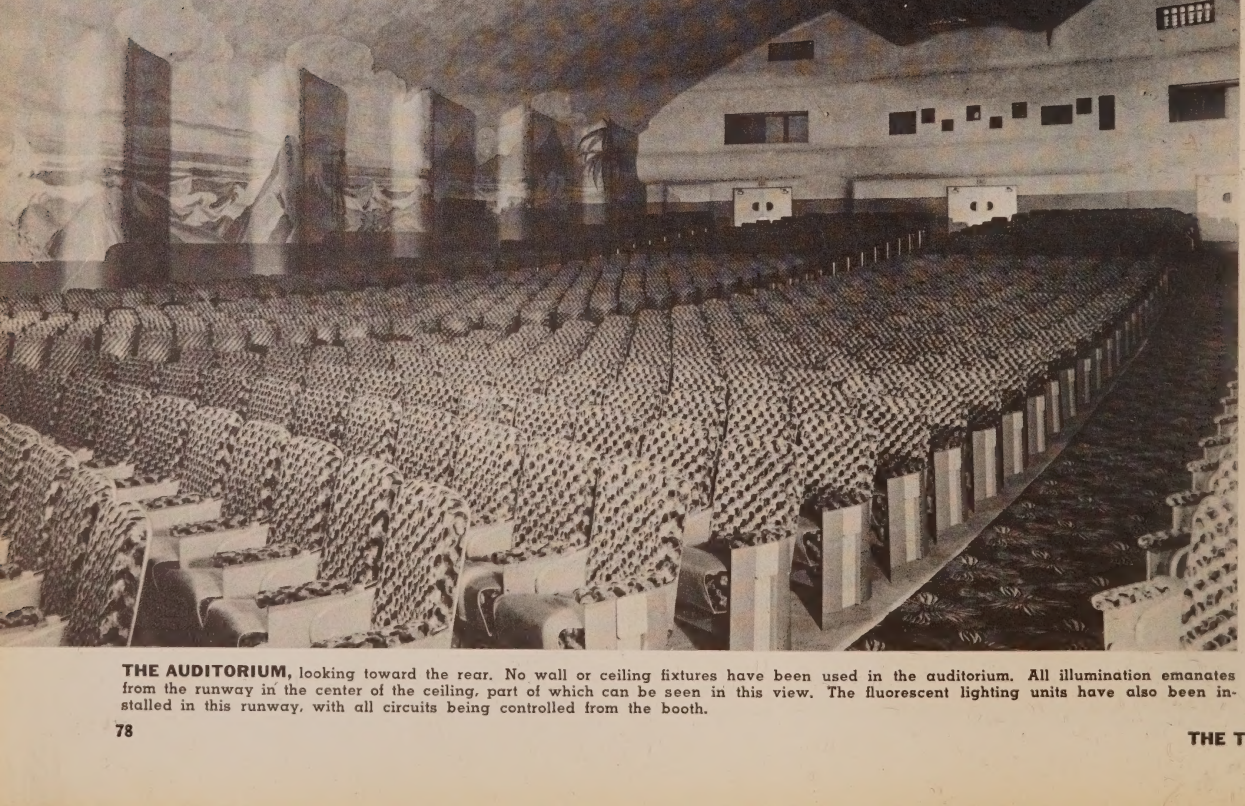


Owners: Galston & Sutton
Architect: Carl G. Moeller
Consultant: Clarence J. Smale

THE FRONT, at night, is ablaze with light and stands out prominently against the backdrop of evening sky. An interesting innovation in theatre fronts is the mural on the upper facade depicting Hawaiian life. The entire exterior has been finished in light tones of color which gives greater prominence to the sign letters on the marquee. The overall design here is outstanding.



THE AUDITORIUM, looking toward the proscenium. The mural running the full length of the side wall shown depicts Hawaiian water-life, while the opposite wall carries one handled in the same manner, depicting Hawaiian land-life. These have been done with fluorescent paint which radiates when flooded with invisible ultra-violet rays. This type of decorative lighting, though not new, has been gaining prominence under its popular name of "black lighting."



THE AUDITORIUM, looking toward the rear. No wall or ceiling fixtures have been used in the auditorium. All illumination emanates from the runway in the center of the ceiling, part of which can be seen in this view. The fluorescent lighting units have also been installed in this runway, with all circuits being controlled from the booth.

REFERENCE FACTS:

Size of Lot: 110 x 175

Seating Capacity: 1100

Acoustical Treatment—Acoustical plaster has been used in conjunction with a ceiling designed especially for better acoustics. Acoustical plaster manufactured by Acoustite Co.

Air Conditioning—No draft system. Manufactured by Western Air Conditioning Co.

Carpets—Manufactured by A. & M. Karagheusian, Inc.

Chairs—Auditorium chairs manufactured by Kroehler Mfg. Co. Loge chairs manufactured by Heywood-Wakefield Co.

Construction Material—Brick, concrete, steel.

Curtain Controls—Weaver Manufactured by Weaver Mfg. Co.

Display Frames—Manufactured by Theatre Specialty Co.

Draperies and Stage Curtains—Manufactured by B. F. Shearer Co.

Fluorescent Paints—Phantom-Lite. Manufactured by Phantom-Lite Products.

Furniture—Manufactured by Theatre Upholstery Co.

Generators—Hertner. Manufactured by Hertner Electric Co.

Lighting Fixtures—Manufactured by Ford-Harvey Co.

Projection Lamps—Peerless Magnarc. Manufactured by J. E. McAuley Mfg. Co.

Projection Machines—Simplex E-7. Manufactured by International Projector Corp.

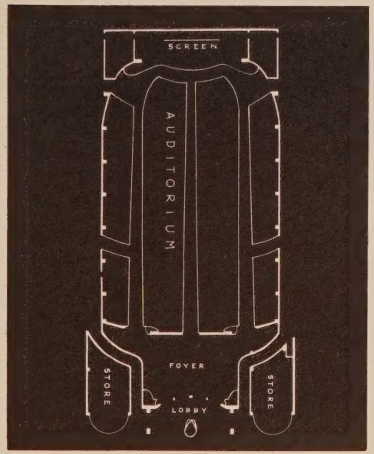
Screen—Walker white. Manufactured by Walker American Corp.

Sign and Marquee—Fabricated and erected by Q. R. S. Neon Co.

Sign Letters—Wagner. Manufactured by Wagner Sign Service, Inc.

Supply Dealer—B. F. Shearer Co.

Ticket Register—Manufactured by General Register Corp.

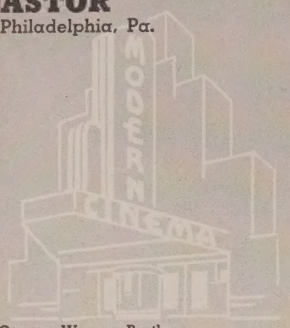


THE FOYER decoration is simple but tastefully handled. Very few dark tones have been used in the general painting, making the dark tones of color in the carpet and decorations stand out more prominently.

THE MEZZANINE LOUNGE has many modern touches not found in the usual run of houses. The ceiling treatment is unique and though it may seem to be a little overdone is still effective.

1940 PRESENTATION No. 21

The New
ASTOR
Philadelphia, Pa.



Owner: Warner Brothers
Architect: John Eberson

Back in 1905 a number of wealthy Philadelphians subscribed to a fund for the erection of a theatre to house legitimate plays. Christened The German Theatre by its fosterers it remained as a legit house for many years. Later a stock company found its way into the house and remained for a few seasons with much success. When the stock company ceased operating the policy changed to straight Yiddish stage plays. This policy prevailed until the house was taken over by Ben Amsterdam and Louis Korson to be operated as a straight picture theatre. This policy was still in effect when this old landmark was torn down to make way for the modern structure shown here.

THE EXTERIOR of this completely rebuilt house adds a bright spot to the neighborhood that is greatly appreciated by both patrons and merchants. Situated at the intersection of two main thoroughfares, its marquee with five changeable letter signs can be seen from all directions. The theatre name signs are metal with sockets for incandescent lamp illumination.

THE FOYER has a painted wainscot with upper portion of the walls being covered in gold damask with a silver scroll.

REFERENCE FACTS:

Size of Lot: 113 x 192
Seating Capacity: 1422

Acoustical Treatment—Damask over rockwool.

Air Conditioning—Refrigeration system. Carbondale compressors manufactured by Worthington Pump and Machine Co.

Carpets—Crestwood. Manufactured by Alexander Smith & Sons Co.

Chairs—Spring edge leatherette seat and upholstered mohair back. Manufactured by Ideal Seating Co.

Construction Material—Face brick, steel, concrete, Vitrolite structural glass. Vitrolite manufactured by Libbey-Owens-Ford Glass Co.

Curtain Controls—A.D.C. Manufactured by Automatic Devices Co.

Draperies, Stage Curtains, Damask Wall Covering—Manufactured and installed by Charles H. Kenney Studios, Inc. Maharam fabrics.

Decorator—Rambusch, Inc.

Generators—Robins Imperial. Manufactured by Imperial Electric Co.

Lighting Fixtures—Manufactured by Rambusch, Inc.

Projection Lamps—Ashcraft. Manufactured by C. S. Ashcraft Mfg. Co.

Projection Machines—Super Simplex. Manufactured by International Projector Corp.

Rubber Mats—Manufactured by U. S. Rubber Co.

Screen—Hurley. Manufactured by Hurley Screen Co.

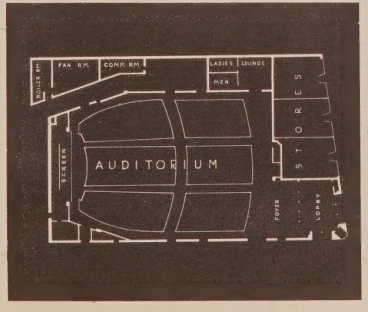
Sign and Marquee—Fabricated and erected by Claude Neon Sign Co.

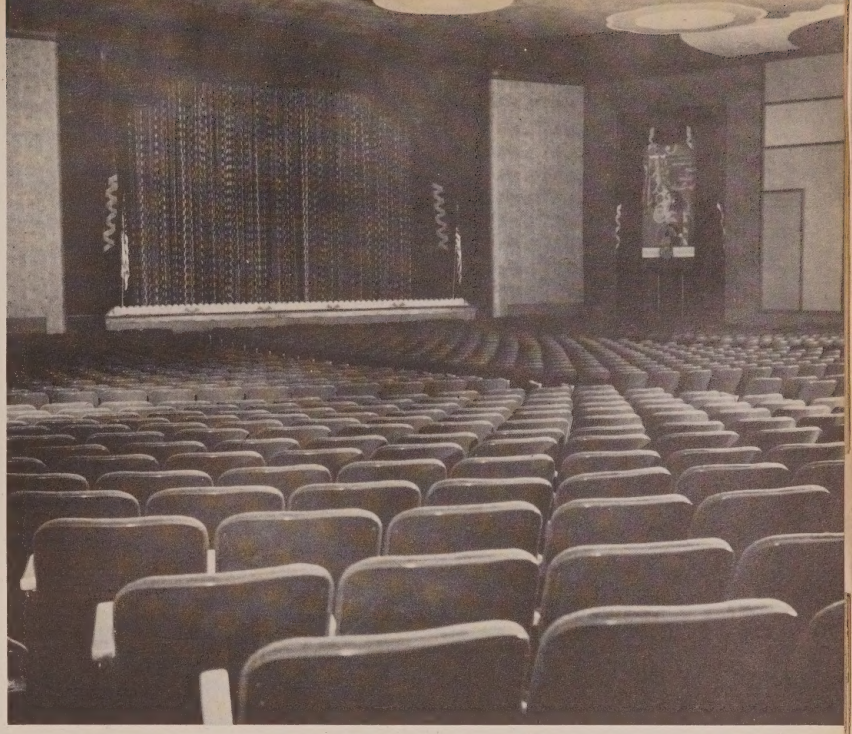
Sign Letters—Wagner. Manufactured by Wagner Sign Service, Inc.

Sound—RCA. Manufactured by RCA Mfg. Co.

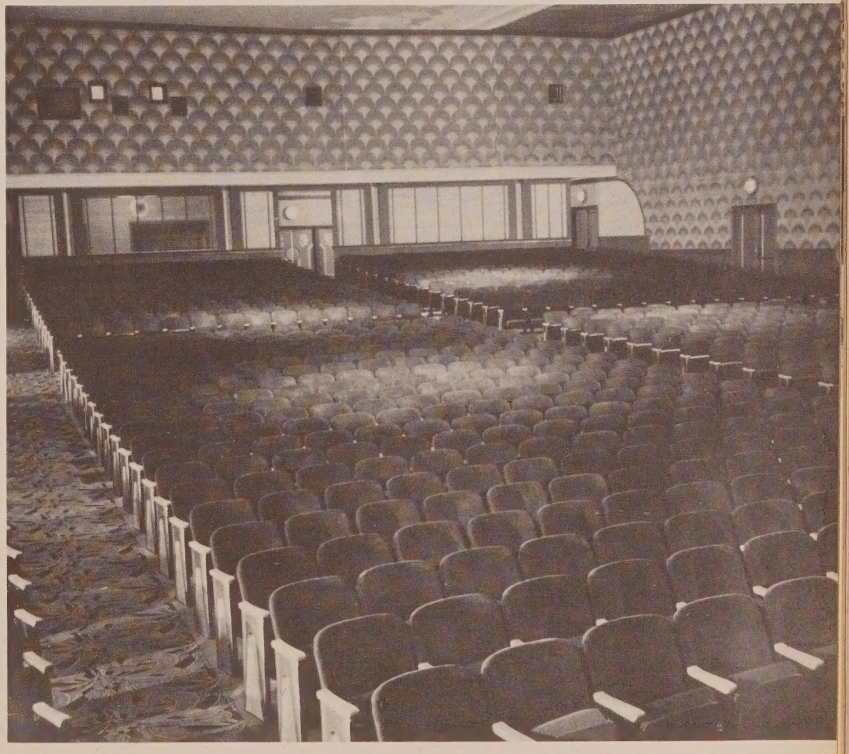
Supply Dealer—Continental Theatre Accessories.

Ticket Register—Manufactured by General Register Corp.





THE PROSCENIUM has been richly draped and curtained in materials of matching tones. The walls flanking the proscenium and the side walls adjacent to them are of walnut Flexwood panelling.



THE AUDITORIUM has been simply decorated, with the rear and side walls being covered in a gold figured damask. The damask has been stretched over rockwool installed for insulation and acoustical purposes. **Rockwool manufactured by Geo. R. Hall & Sons.**

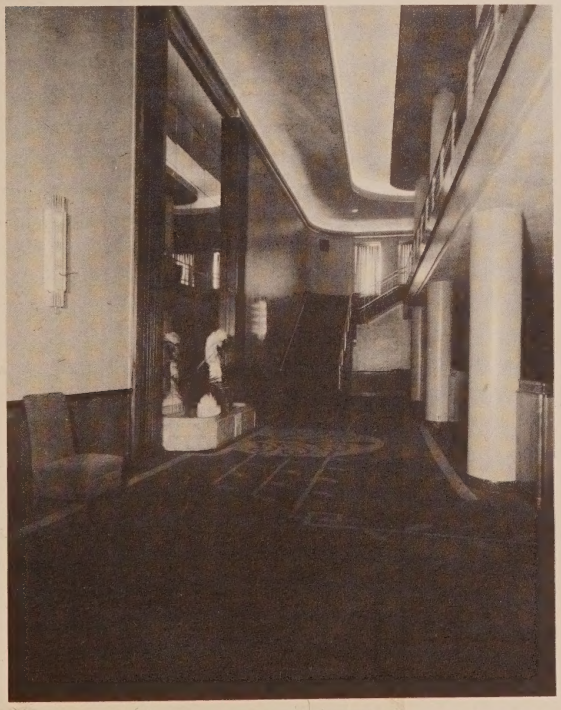
1940 PRESENTATION No. 22

The New
MILLER
Augusta, Ga.

Owner: Augusta Amusements, Inc.
Architect: Roy A. Benjamin

THE EXTERIOR, at night, receives the bulk of its illumination from the massive, circular marquee which graces it. This particular marquee design was found to be most advantageous because of the narrow entrance provided. The three glass block panels, in the upper facade, run from the marquee to the roof and are back-lighted by three circuits of neon on a flasher system.

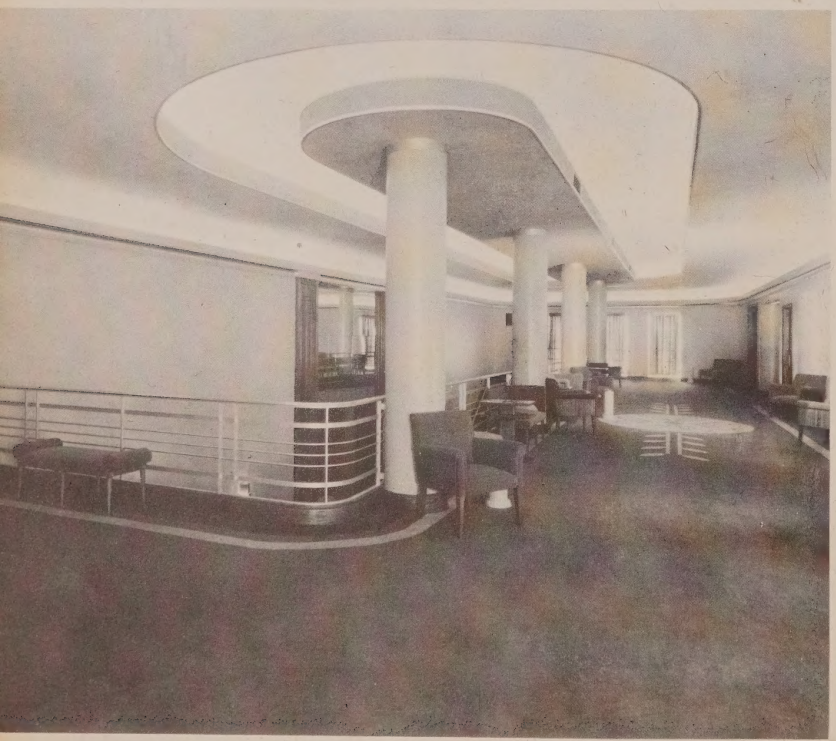
THE PROSCENIUM, looking from the third balcony. The stage curtain and valances are in peanut and coral, contrasting nicely with the flanking walls which have been finished in alternate horizontal panels of shades of wood roses and coral. The ceiling, shown in this view, has been covered with Acousti-Celotex tiles.



THE FOYER might also be termed the standee room. Statuary in front of the large mirror shown here was especially designed and has been done in white marble.

THE EXTERIOR, in daylight. Not visible in the night view on the preceding page is the attractiveness of the ivory stucco facade. The metal trim used here is aluminum.

THE AUDITORIUM, looking toward the rear. The side walls are commercial insulation board on wood furring covered with stretched pleated fabric in two shades of coral. Sabinite acoustical plaster has been used for the finish on the ceiling and side walls of the third balcony to prevent the pocketing of sound.



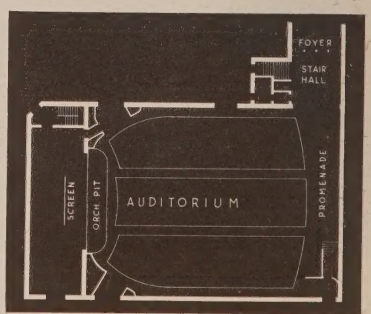
THE MEZZANINE LOUNGE has been simply appointed and might readily be mistaken for a room in an ultra modern hotel. All lighting here is indirect, the main source being the ceiling island which is supported by the four huge pillars. The stainless steel railing is a modern touch.

THE ARCADE which leads from the front entrance to the foyer is 165 feet long and 40 feet wide. It is a dignified approach to the theatre proper.

REFERENCE FACTS:

Size of Lot: 95 x 120
Seating Capacity. 1567
Cost Including Equipment: $350,000

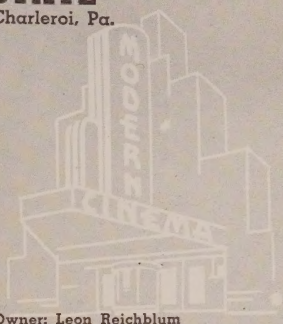
Acoustical Treatment—Acousti-Celotex, Sabinite plaster and pleated mohair fabric. Acousti-Celotex manufactured by Celotex Corp. Sabinite manufactured by U. S. Gypsum Co. Mohair fabric by L. C. Chase.
Air Conditioning—120 ton refrigeration system. Manufactured by Westinghouse Electric Co.
Carpets—Bigelow Lockweave designed especially for this house in burgandy and beige with designs in shades of green. Manufactured by Bigelow-Sanford Carpet Co.
Chairs—Deluxe, spring edge, corduroy seat and mohair spring back. Manufactured by Heywood-Wakefield Co.
Construction Material—Steel, brick, concrete and glass block. Glass block manufactured by Libbey-Owens-Ford Glass Co.
Curtain Controls—Vallen. Manufactured by Vallen, Inc.
Decorator—Wil-Kin Theatre Supply, Inc.
Display Frames—Aluminum. Manufactured by Reliance Art Metal Co.
Draperies—Manufactured by Wil-Kin Theatre Supply, Inc.
Furniture—Natural blonde wood upholstered in green, beige and coral. Supplied by Wil-Kin Theatre Supply, Inc.
Generators—Hertner. Manufactured by Hertner Electric Co.
Lighting Fixtures—Specially designed fixtures manufactured by Hub Electric Co. Stock fixtures by Gruber Brothers and Lightolier Co.
Orchestra and Organ Lifts—Constructed by Bruckner Mitchell, Inc.
Organ—Hammond. Installed by H. S. Baird.
Projection Lamps—Peerless Magnarc. Manufactured by J. E. McAuley Mfg. Co.
Projection Machines—Simplex E-7. Manufactured by International Projector Corp.
Rubber Mats—Manufactured by O. W. Jackson Co.
Screen—Hurley. Manufactured by Hurley Screen Co.
Sign and Marquee—Fabricated and erected by Neon Advertising Co.
Sign Letters—Wagner. Manufactured by Wagner Sign Service, Inc.
Sound—RCA. Manufactured by RCA Mfg. Co.
Supply Dealer—National Theatre Supply Co. and Wil-Kin Theatre Supply, Inc.



Leon Reichblum is the owner and operator of this newest addition to the entertainment field in Charleroi, Pennsylvania. With a population of 11,260 (1930 census) the town already boasted of three theatres with a total seating capacity of 1999, before the addition of this 678 seater which now becomes the second largest theatre in the town. Alan C. Brenton, a local architect, was retained to convert an old building into this small but modern house. That Brenton fulfilled his obligations to his client by concientious effort is reflected in the photos shown on these pages.

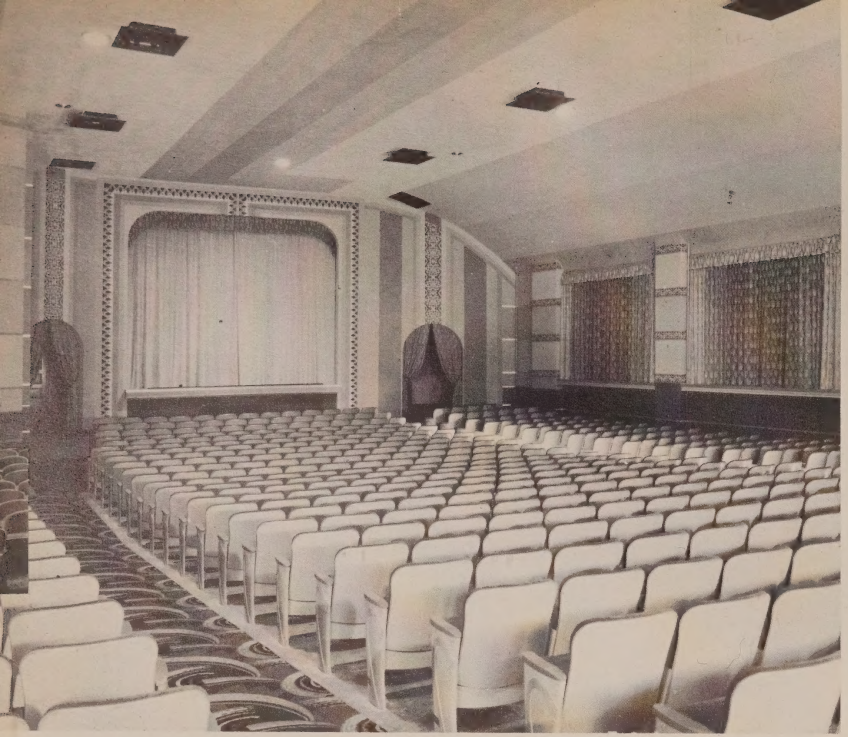
1940 PRESENTATION No. 23

The New
STATE
Charleroi, Pa.

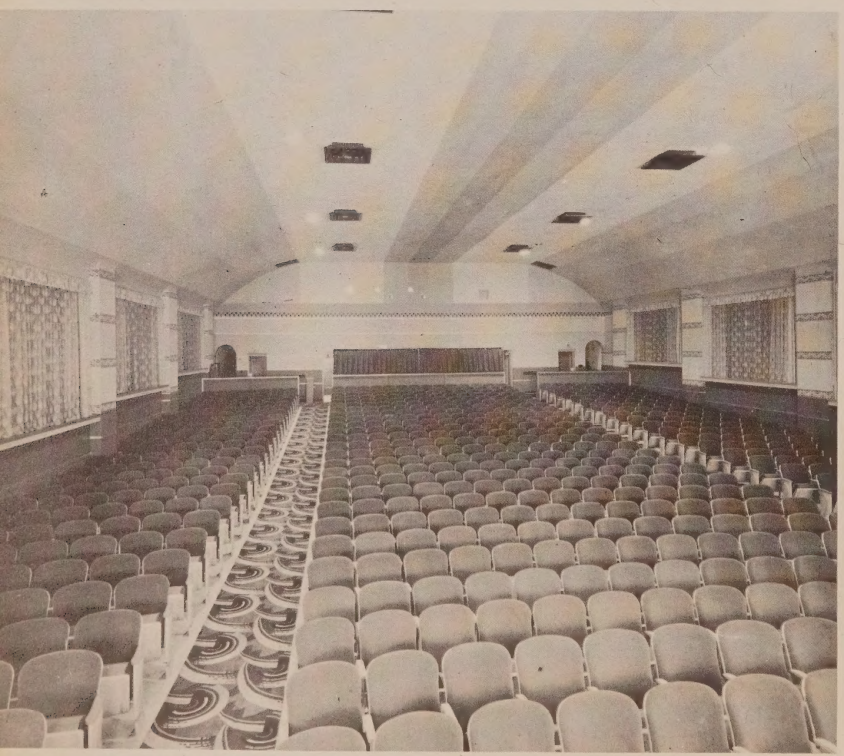


Owner: Leon Reichblum
Architect: Alan C. Brenton

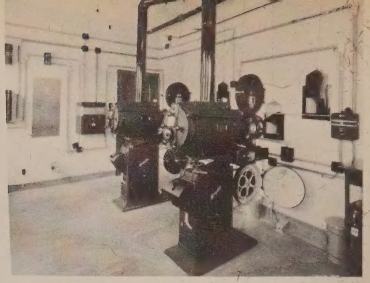
THE FRONT has been finished in varied shades of porcelain enamel. As a decorative touch the two masks usually associated with things theatrical, those of comedy and tragedy, have been spotted in a plaque design on the two fields of lighter colored porcelain. As a relief from the monotony of porcelain, two columns of glass brick border the built-in display frames of stainless steel.



THE AUDITORIUM, looking toward the proscenium. The ceiling and walls are in tinted, sand finish plaster. The decorative panels in the side walls are fabric, with an acoustical felt backing.



THE AUDITORIUM, looking toward the rear. Modernistically designed carpet, in blue, red and yellow, covers the aisles. The tints in the ceiling plaster vary to form decorative panels. Ceiling vents are from the fresh air ducts.



THE BOOTH is large and well kept. All equipment installed is of recent design and manufacture.

REFERENCE FACTS:

Size of Lot: 100 x 57

Seating Capacity: 678

Cost Without Ground: Not Available

Acoustical Treatment—Acoustical felt applied behind fabric in a panel effective on side walls.

Air Conditioning—Water cooled system using American Blower, Fan and Washer. Manufactured by American Blower Corporation.

Carpets—National Crestwood in blue, red and yellow. Manufactured by Alexander Smith & Sons Co.

Chairs—Irwin Crusader. Manufactured by Irwin Seating Co.

Construction Material—Cinder block, brick, steel, concrete and porcelain enamel.

Curtain Controls—Vallen. Manufactured by Vallen, Inc.

Decorator—Vincent Scatena.

Display Frames—Manufactured by Artkraft Sign Co.

Draperies and Stage Curtains—Manufactured by Vincent Scatena.

Generators—Hertner. Manufactured by Hertner Electric Co.

Projection Lamps—Simplex High. Manufactured by Strong Electric Corp.

Projection Machines—Simplex E-7. Manufactured by International Projector Corp.

Rubber Mats—Manufactured by American Mat Corp.

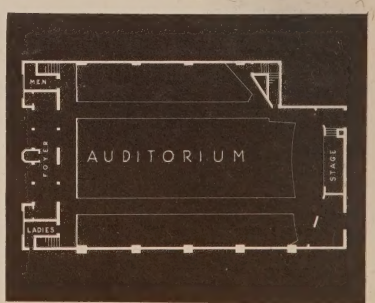
Sign and Marquee—Manufactured by Artkraft Sign Co.

Sign Letters—Manufactured by Artkraft Sign Co.

Sound—RCA. Manufactured by RCA Mfg. Co.

Supply Dealer—National Theatre Supply Co.

Ticket Register—General Register 3 Unit. Manufactured by General Register Corp.



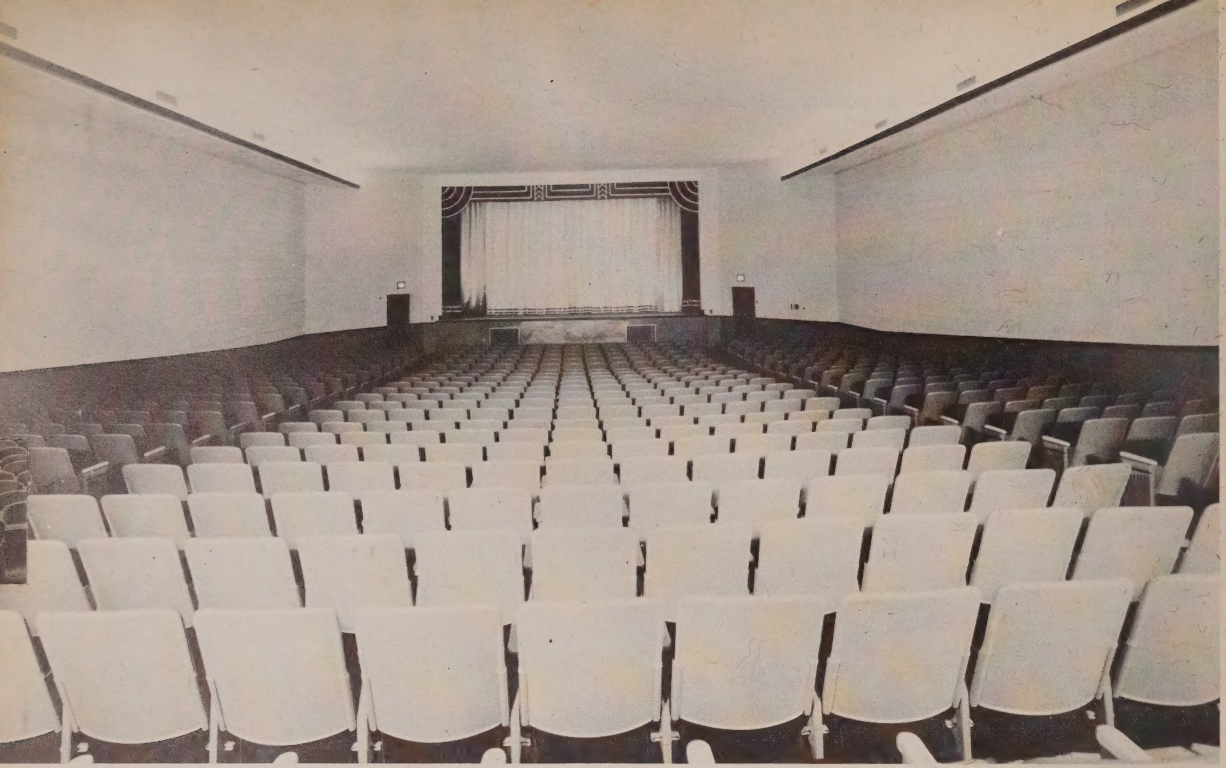
Several years ago Jeff Hofheimer, prominent, independent Virginia exhibitor, laid plans for the expansion of his circuit of Virginia theatres. These theatres were not to be constructed on the scale of the big city houses but were to be small, modern houses built on a low budget. It was decided that Visulite would be a fitting name for each theatre as it was planned to have only one in a town. The first was erected in Norfolk, Va., followed not long after by one in Staunton. In Covington, Va., the third was recently opened. Mr. Hofheimer has built economically but good. Modern ideas that would be acclaimed if found in deluxe houses have been incorporated in these houses without fanfare.

1940 PRESENTATION No. 24

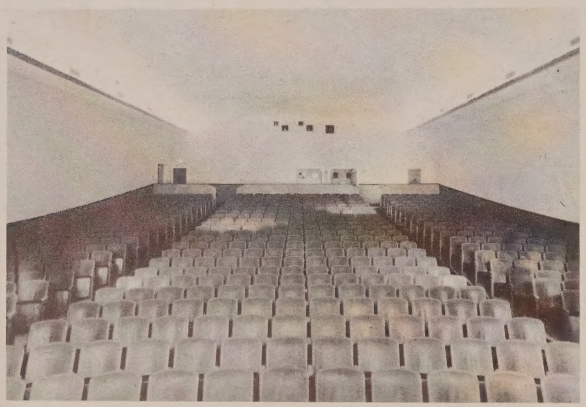
The New
VISULITE
Covington, Va.

Owner: Jeff Hofheimer

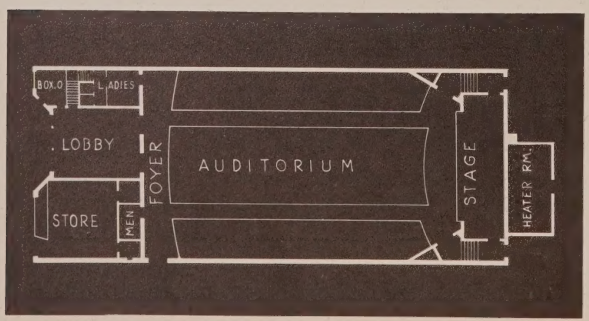
THE FRONT has been finished in face brick and structural glass. The structural glass is in ivory with a black glass base. Though a feature theatre, the turnstile arrangement common to newsreel houses has been found most advantageous. The railing shown in the lower portion of this view forms the passageway through which the patron must pass. The usual doorman is eliminated.



THE AUDITORIUM, looking toward the proscenium. The walls of this room are cinder block sprayed with water color in a shade of old rose. The cinder block is the building wall, unfaced on either side. This manner of handling these blocks makes for good acoustics because of the sound absorbent qualities of the blocks.



THE AUDITORIUM, looking toward the rear. The illumination here is indirect. Neon tubes are the light source.



REFERENCE FACTS:

Size of Lot: 60 x 150

Seating Capacity: 540

Cost Without Ground: $25,000

Acoustical Treatment—Cinder block walls.

Air Conditioning—Summer and winter system. Manufactured by Carrier Corp.

Carpets—Crestwood. Manufactured by Alexander Smith & Sons Co.

Chairs—Spring edge seat, metalclad, upholstered backs. Manufactured by International Seat Corp.

Construction Material—Brick, steel, concrete, cinder block and structural glass.

Curtain Controls—Vallen. Manufactured by Vallen, Inc.

Decorator—Paramount Decorating Co.

Display frames—Wood and chrome.

Draperies and Stage Curtains—Manufactured by Paramount Decorating Co.

Furniture—Howell chrome. Manufactured by The Howell Co.

Lighting Fixtures—Neon indirect fixtures. Manufactured by Phillips Neon Sign Co.

Projection Lamps—Ashcraft cyclex. Manufactured by C. S. Ashcraft Mfg. Co.

Projection Machines—Super Simplex. Manufactured by International Projector Corp.

Screen—Da-Lite. Manufactured by Da-Lite Screen Co.

Sign and Marquee—Fabricated and erected by Phillips Neon Sign Co.

Sign Letters—Adler. Manufactured by Adler Sign Letter Co.

Sound—M-11 Motiograph-Western Electric. Manufactured by Western Electric Mfg. Co.

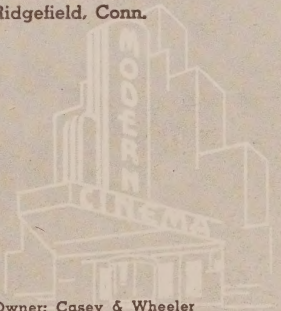
Supply Dealer—J. F. Dusman.

Turnstile—Perey. Manufactured by Perey Turnstile Co.

THE EXTERIOR surrounded by old shade, is as picturesque a setting as one might hope to find as the locale for a small town theatre. The facade is of red brick with the wood trim, window sash, and shutters painted white. The entrance is graced by a portico with four columns supporting its roof. Mounted upon this roof is the theatre name sign.

1940 PRESENTATION No. 25

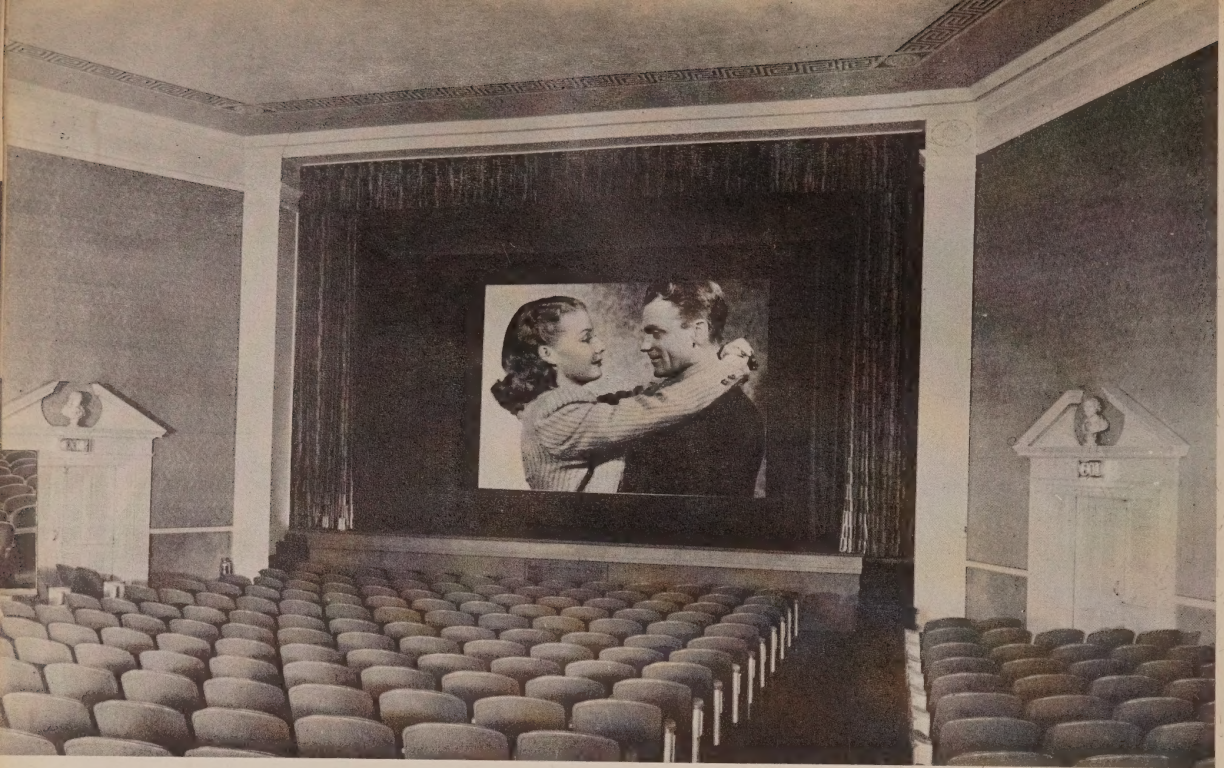
The New
PLAYHOUSE
Ridgefield, Conn.



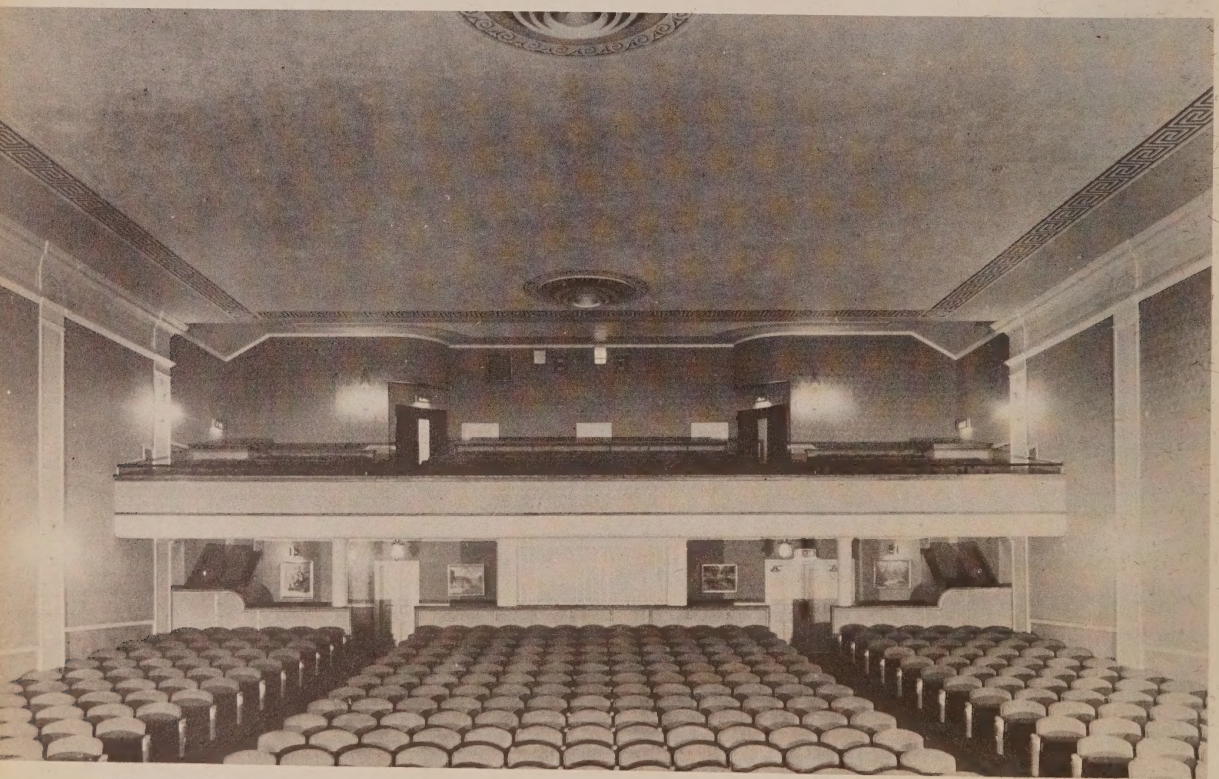
Owner: Casey & Wheeler
Architect: John & Drew Eberson

For many years the populace of Ridgefield, Connecticut, had visions of a modern motion picture in their community. It was not, however, until Irwin Wheeler, of the firm of Casey and Wheeler, operators of more than 30 theatres, looked into the possibilities of an addition to their chain in this community that these dreams became a reality.

The firm of John and Drew Eberson, architects, was commissioned to draw the plans. Messrs. Eberson, in planning the house, stuck fast to a true colonial design that is far from being out of place in this small New England community where percentage of the homes are designed along these lines.



THE PROSCENIUM is of simple design, the only decoration here being the stage curtains in shades of coral. On either side of the proscenium arch the exit doors have been placed and it should be noted that they are of colonial design in keeping with overall plan.



THE AUDITORIUM though small, boasts of a balcony with a seating capacity of slightly more than 100. All chairs throughout the house are spaced 38 inches back to back giving the maximum of comfort. Walls are rock wool covered with fabric with wood trim.

REFERENCE FACTS:

Size of Lot: 91 x 145

Seating Capacity: 605

Cost without ground: Not available.

Acoustical Treatment—Rock wool over fabric. Rockwool manufactured by Geo. R. Hall.

Air Conditioning—Refrigeration System. Compressors manufactured by The Trane Co.

Carpets—National Crestwood. Manufactured by Alexander Smith & Sons Co.

Chairs—Coral corduroy spring back and henna spring edge seats. Manufactured by Heywood-Wakefield Co.

Construction Material—Concrete, steel and brick.

Curtain Controls—Vallen. Manufactured by Vallen, Inc.

Decorator—Rau Studios.

Display Frames—Designed by architect included in general contract.

Draperies and Stage Curtains—Manufactured by Rau Studios.

Generators—Robin Imperial. Manufactured by Imperial Electric Co.

Lighting Fixtures—Manufactured by Charles J. Winston & Co.

Projection Lamps—Brenkert Suprex. Manufactured by Brenkert Light Proj. Co.

Projection Machines—Super Simplex. Manufactured by International Projector Corp.

Rubber Mats—Manufactured by Puritan Rubber Co.

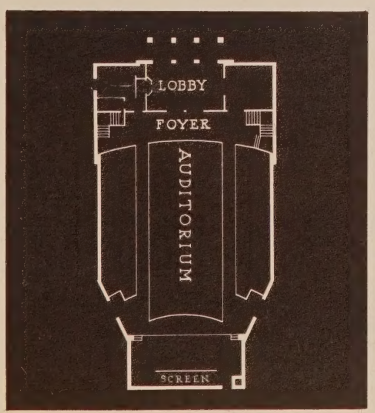
Screen—Hurley. Manufactured by Hurley Screen Co.

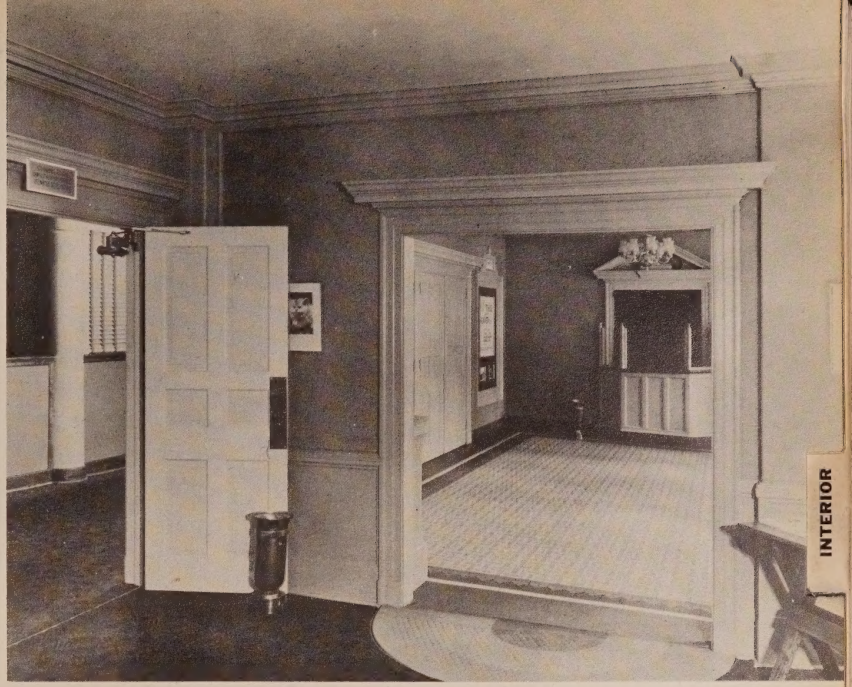
Sign—Manufactured by Continental Sign Co.

Sound—RCA. Manufactured by RCA Mfg. Co.

Supply Dealer—National Theatre Supply Co.

Ticket Register—Manufactured by General Register Corp.





THE BOXOFFICE is situated in the lobby and is a far cry from the usual in boxoffice design. This view was made from the foyer, which looks into the standee room as well as the lobby. Sign over standee room door gives notice as to the standee capacity.

THE LADIES' LOUNGE is smartly appointed and although the furnishings might be a little more modern than the architectural design warrants, the thought of giving the patrons the utmost in comfort permitted this liberty.

1940 PRESENTATION No. 26

The New
AVON
Stamford, Conn.

Owner: Weiss Amusement Co.
Architect: William I. Hohauser.

Modern showmanship has been combined with colonial architecture in the design of this house situated in the small community of Stamford, Connecticut. The house with a seating capacity of 780 was designed by William I. Hohauser, New York architect, specializing in theatre work, for the Weiss Amusement Corporation, operators of several other theatres in the community.

THE FACADE has been finished with red face brick with white joints and white marble trimmings. The theatre name sign is porcelain enamel and stainless steel with neon illumination. The white columns of the arcade are wood.

THE LADIES' LOUNGE is lavishly appointed with furnishings of a design that dates back to the colonial period.

REFERENCE FACTS:

Size of Lot: 50 x 140

Seating Capacity: 780

Cost without ground: $125,000

Acoustical Plaster—Sabinite acoustical plaster. Manufactured by U. S. Gypsum Co.

Air Conditioning—York compressors also well water supply. Compressors manufactured by York Ice Machinery Co.

Carpets—Red, green and buff chenille. L. Bamberger, Newark, N. J.

Chairs—American Bodiform. Manufactured by American Seating Co.

Construction Material—Brick, concrete, steel

Curtain Controls—Vallen. Manufactured by Vallen, Inc.

Decoration—Directed by architect.

Display Frames—Colonial design in wood. Milled to architect's specifications.

Generators—Hertner. Manufactured by Hertner Electric Co.

Lighting Fixtures—Manufactured by Portchester Lighting Fixture Co.

Projection Lamps—Peerless Magnarc. Manufactured by J. E. McAuley Mfg. Co.

Projection Machines—Super Simplex. Manufactured by International Projector Corp.

Rubber Mats—Manufactured by Simon Manges & Son.

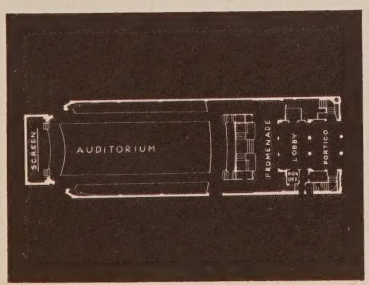
Screen—Walker White. Manufactured by Walker American Corp.

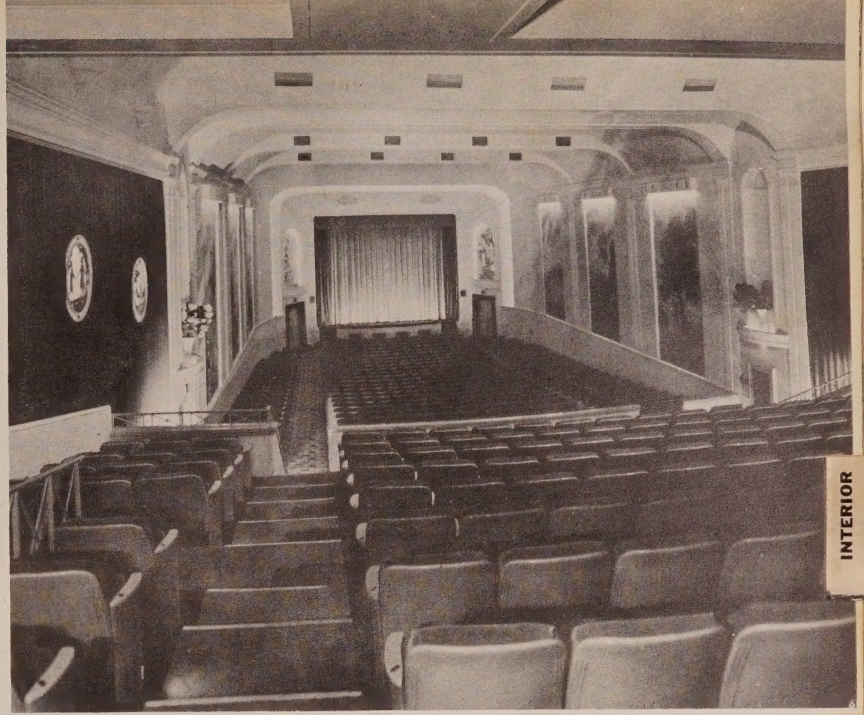
Sign—Fabricated and erected by Claude Neon of Connecticut.

Sound—Simplex Type "A." Manufactured by International Projector Corp.

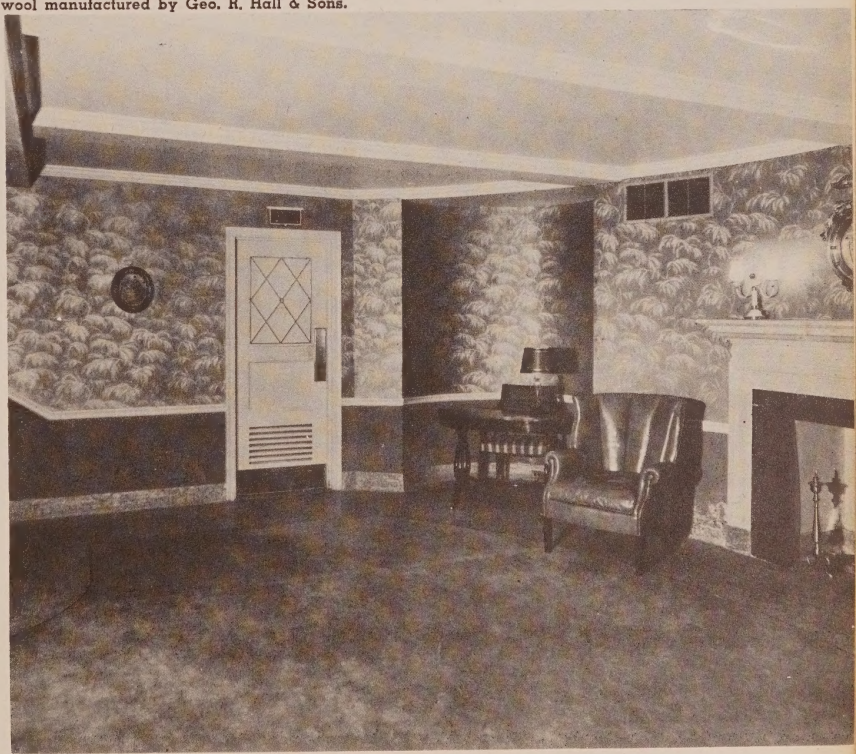
Supply Dealer—National Theatre Supply Co.

Ticket Register—Manufactured by American Ticket Devices.





THE AUDITORIUM decorative scheme is distinctive. The murals in the front of the house have been done on canvas applied over rock wool. Red satin covers the rock wool on the rear walls. Color scheme throughout is a combination of red, cream and eggplant. **Rock-wool manufactured by Geo. R. Hall & Sons.**



THE MAIN LOUNGE is covered with a wine color Seamloc carpet with a terrazzo border. The walls are covered with silk wall paper with a canvas wainscot. Painted plaster is the ceiling finish.

1940 PRESENTATION No. 27

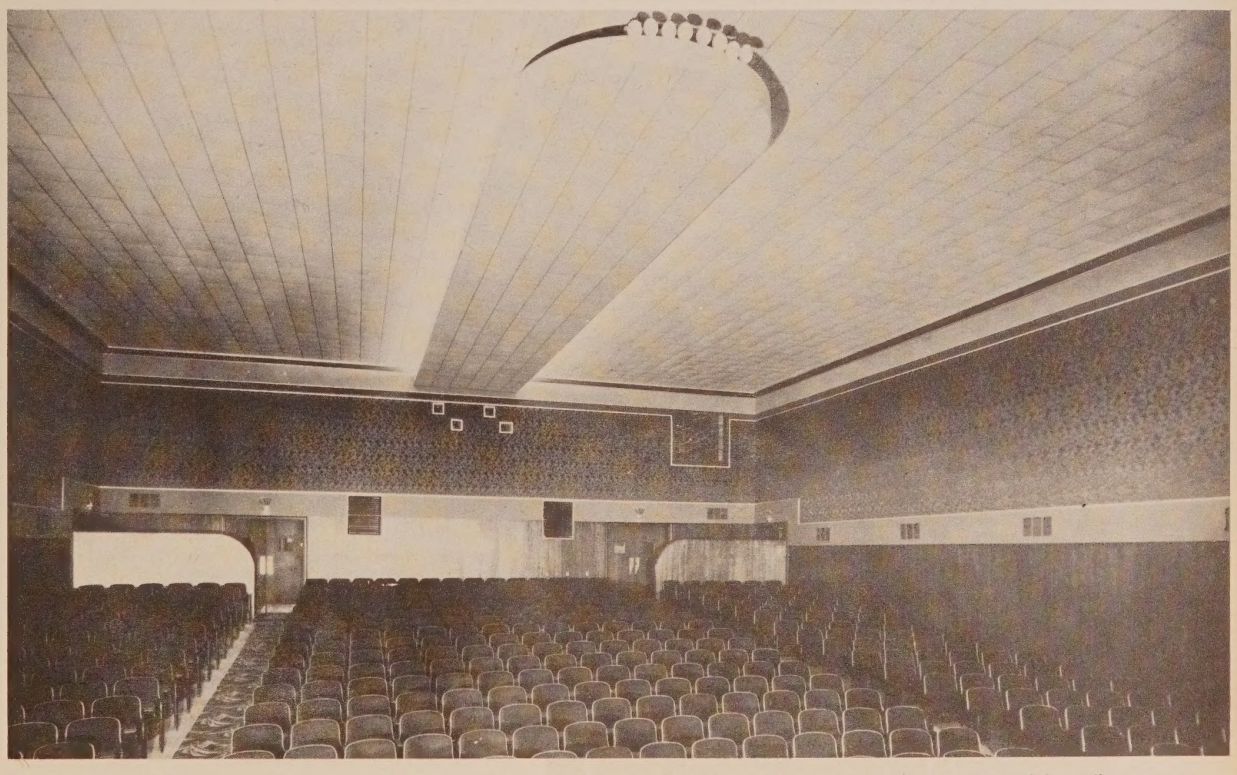
The New
COLONIAL
Hopewell, N. J.

Owner: Herbert Laird
Architect: Walter Hankin

THE EXTERIOR DESIGN of this house is an interpretation of Dutch colonial architecture. The facade is red face brick with the doors, window sash, and display frames of white painted wood. The gabled roof is the outstanding feature of this front.

The touch of Dutch Colonial architecture incorporated in the design of this house is well placed. Situated in Hopewell, N. J., a small New Jersey town which is situated above Trenton, and in the heart of a rich farming area, it is not overshadowed by large buildings which would detract from its beauty. Setting alone as it does, it might remind one of one of the much heralded New England summer playhouses. Architect Walter Hankin and theatre operator Herbert Laird should be complimented on their success in erecting this deluxe playhouse at such a low cost.

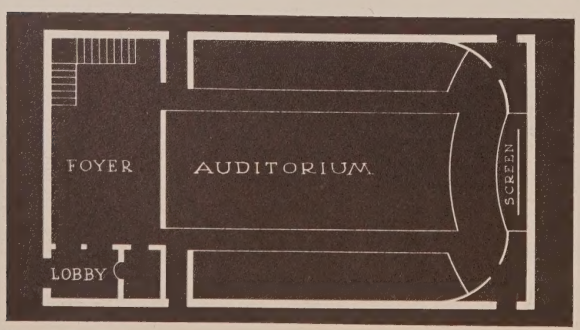
THE PROSCENIUM is draped with two sets of valances and side drapes. The first set in coral and the second in turquoise blue. The curtain is gold. In this view it is readily noticed that the side walls have been curved into the proscenium so that no dead corners exist.



THE AUDITORIUM, looking toward the rear. Dubonnet damask with a colonial design in biscuit covers the upper portion of the walls. The wainscot is plaster painted in walnut and grained to give a panelling effect. The ceiling is Celotex Tiles with an island in the center housing the illuminating source.

THE LOBBY is finished in knotty pine and appointed with maple furnishings. Chintz drapes in bright colors add a homey touch to this setting. The room has been carpeted with the same carpeting as the aisles and standee room in the auditorium.

THE ENTRANCE leads directly into the lobby as can be seen in this view of the lobby.



REFERENCE FACTS:

Size of Lot: 75 x 100

Seating Capacity: 500

Cost without ground: $40,000

Acoustical Treatment—Acousti-Celotex Tiles used on ceiling. Manufactured by The Celotex Corp.

Air Conditioning—Blowers circulate fresh air through ducts to all parts of building.

Carpets—National Crestwood. Manufactured by Alexander Smith & Sons Co.

Chairs—Rust spring edge seat and upholstered back. Manufactured by American Seating Co.

Construction Material—Brick and cinder block.

Curtain Controls—Vallen. Manufactured by Vallen, Inc.

Decorator—Paramount Decorating Co.

Display Frames—Colonial design in wood. Milled to architect's specifications.

Draperies and Stage Curtains—Manufactured by Paramount Decorating Co.

Lighting Fixtures—Manufactured by Voigt Co., and Chase Brass and Copper Co.

Projection Lamps—Forest Universal Trim. Manufactured by Forest Mfg. Co.

Projection Machines—Super Simplex. Manufactured by International Projector Corp.

Rectifiers—Forest. Manufactured by Forest Mfg. Co.

Screen—Hurley Evenlite. Manufactured by Hurley Screen Co.

Sound—Syncrofilm. Manufactured by Weber Mfg. Co.

Supply Dealer—National Theatre Supply Co.

Ticket Register—Manufactured by General Register Corp.

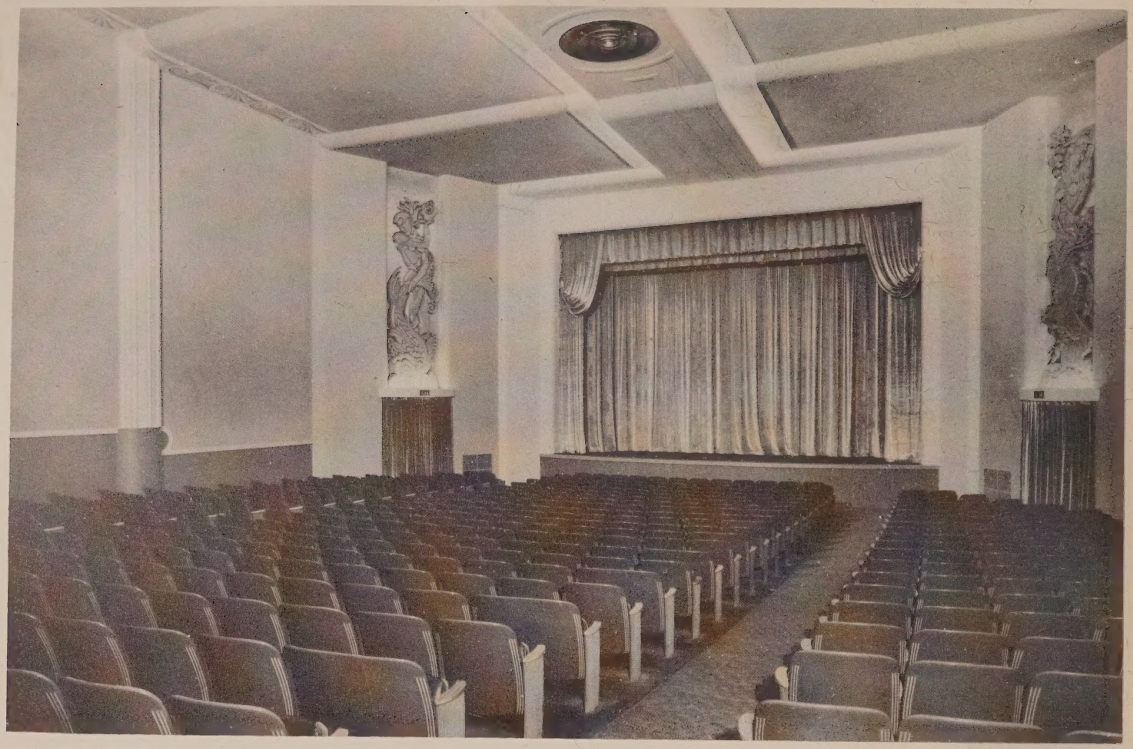
THE FRONT is finished in cream and rust porcelain enamel. The marquee is triangular in shape and is finished in rust harmonizing with the lower facade. The soffit extends in and beyond the boxoffice to the entrance doors. It has been finished in cream to match the upper facade.

Many landmarks in show-business in the southwest have been contributed by Karl Hoblitzelle and Bob O'Donnell of Interstate Circuit (135 theatres) and one of their most recent is the fine theatre shown on these pages. This new house is their eleventh in the city of Houston.

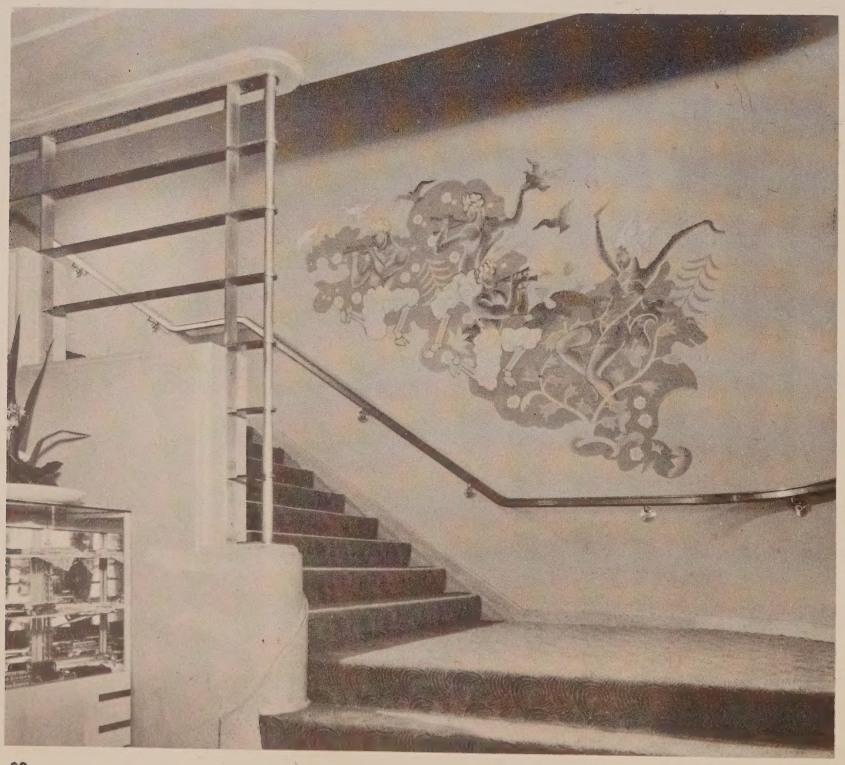
1940 PRESENTATION No. 28

The New
RIVER OAKS
Houston, Texas

Owner: River Oaks Corp.
Operator: Interstate Circuit, Inc.
Architect: Pettigrew & Worley



THE PROSCENIUM, without ornamentation of any nature except for modernly draped curtains, is further set off and framed by two large sculptured murals which are indirectly illuminated at show break.



THE LOBBY STAIRS seem inviting and a pleasure to ascend to the balcony. The modern, stainless steel hand rail and ladder wall tune well with the smartly decorative mural.

THE AUDITORIUM, where simplicity sets the style. Efforts have been made toward planned acoustics through the varying steps of the straw colored ceiling and gray green side walls.

REFERENCE FACTS:

Size of Lot: 60 x 185

Seating Capacity: 1,000

Cost without ground: $83,000

Acoustical Treatment—Sabonite acoustical plaster. Manufactured by U. S. Gypsum Co.

Air Conditioning—Refrigeration system. Manufactured by Carrier Corp.

Carpets—Mohawk. Manufactured by Mohawk Carpet Mills, Inc.

Chairs—American Bodiform. Manufactured by American Seating Co.

Construction Material—Hollow tile, reinforced concrete and structural steel.

Curtain Controls—Vallen. Manufactured by Vallen, Inc.

Decorator—Buck Winn.

Display Frames—Manufactured by Richardson Cabinet Co.

Draperies and Stage Curtains—Peanut and golden yellow. Manufactured by Rayon Velour Co.

Furniture—Manufactured by Richardson Cabinet Co.

Generator—75 amp. "Roth". Manufactured by Century Electric Co.

Lighting Fixtures—Manufactured by Henry Potter.

Projection Lamps—Brenkert. Manufactured by Brenkert Light Projection Co.

Projection Machines—Motiograph. Manufactured by Motiograph, Inc.

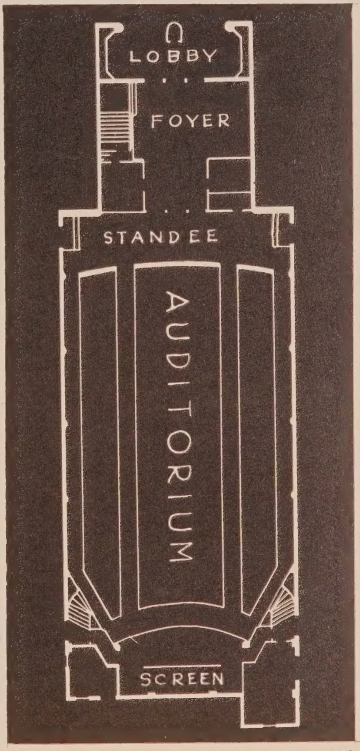
Screen—Walker white sound. Manufactured by Walker American Co.

Sign and Marquee—Fabricated and erected by Mattison-Southwestern Co.

Sign Letters—Adler. Manufactured by Adler Silhouette Letter Co.

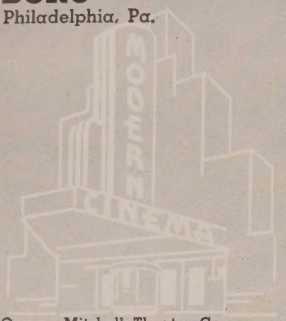
Sound—Western Electric. Manufactured by Western Electric Co.

Ticket Register—Timco. Manufactured by Ticket Issuing Machine Co.



1940 PRESENTATION No. 29

The New
BORO
Philadelphia, Pa.



Owner. Mitchell Theatre Co.
Architect: Gabriel Roth

Encouraged by the success of the Roxy Theatre in Roxborough, the Mitchell Theatre Company, members of which operate the Roxy, recently commissioned architect Gabriel Roth to design a house which would be erected opposite the Roxy and serve the growing entertainment needs of the community. To this end, Roth created the Boro, pictured on these pages—a 500 seat house executed in starkly modern, simple style. A bright spot on Roxborough's Main Street, the Boro is considered a welcome addition to the theatrical picture in this middle-class Philadelphia section.

THE FRONT has been faced with structural glass in shades of grey and green with a stainless steel trim. The marquee is porcelain enamel and stainless steel. Natural mahogany is the finish of the entrance doors.

REFERENCE FACTS:

Size of Lot: 65 x 120

Seating Capacity: 500

Cost Without Ground: $50.000

Acoustical Treatment—Rockwool and Thermax. Thermax manufactured by Northwest Magnesite Co.

Air Conditioning—Winter air conditioning system with provisions for future cooling. Manufactured by York Ice Machinery Corp.

Carpets—National Crestwood in maroon, grey and gold. Manufactured by Alexander Smith & Sons Co.

Chairs—Irwin. Manufactured by Irwin Seatin Co.

Curtain Controls—A.D.C. Manufactured by Automatic Devices Co.

Decorator—Paramount Decorating Co.

Draperies and Stage Curtains—Manufactured by Paramount Decorating Co.

Generators—Hertner. Manufactured by Hertner Electric Co.

Projection Lamps—Simplex High. Sold by National Theatre Supply Co.

Projection Machines—Super Simplex. Manufactured by International Projector Corp.

Screen—Walker white sound. Manufactured by Walker American Corp.

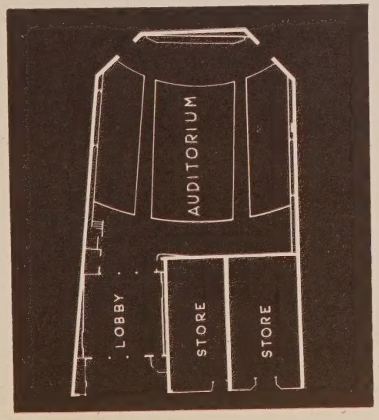
Sign and Marquee—Fabricated and erected by Apex Sign Co.

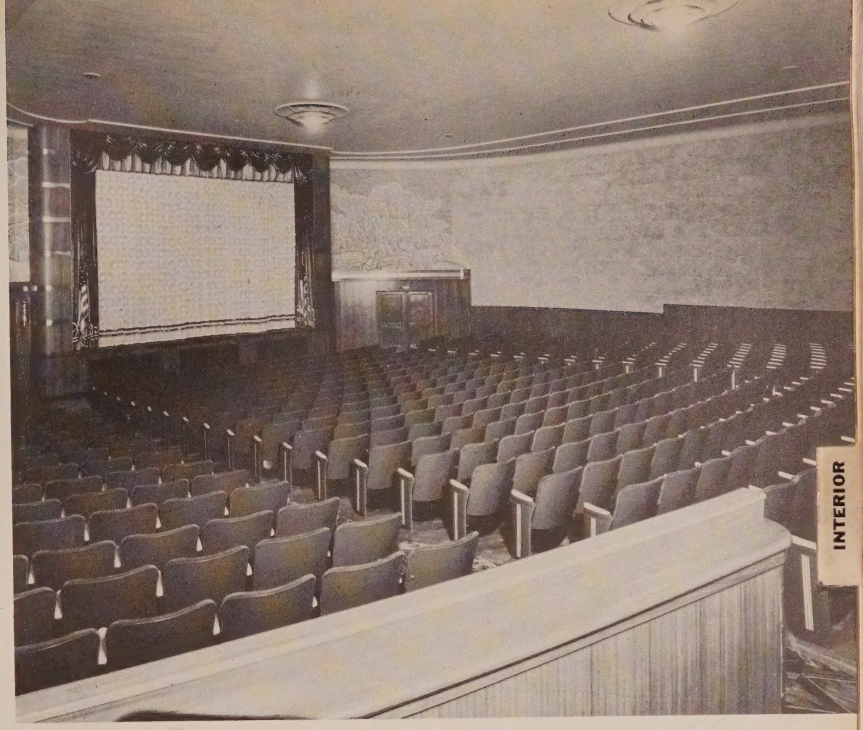
Sign Letters—Adler. Manufactured by Adler Silhouette Letter Co.

Sound—Simplex 4 Star. Manufactured by International Projector Corp.

Supply Dealer—National Theatre Supply Co.

Ticket Register—Timco. Manufactured by Ticket Issuing Machine Co.





INTERIOR

THE PROSCENIUM treatment is attractive. The framing is covered with plywood panelling trimmed with stainless steel bands. Fine line murals in silver seen on either side of the proscenium are the only decorations in the house.

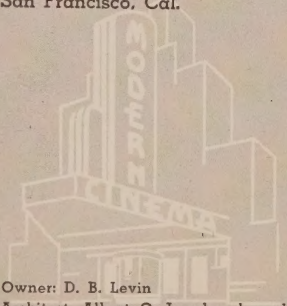
THE AUDITORIUM walls have been faced with rockwool covered with Thermax, an acoustical material that is also decorative. The wainscot is plywood and flows in nicely with the proscenium treatment.

1940 PRESENTATION No. 30

The New

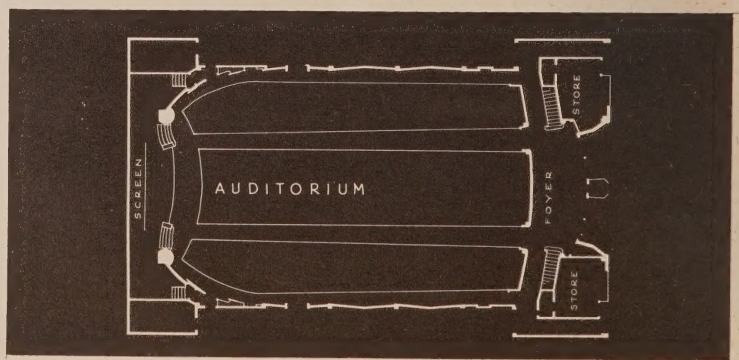
GRAND

San Francisco, Cal.



Owner: D. B. Levin
Architect: Albert O. Lansburgh and S. Charles Lee

THE EXTERIOR, as it appears during the evening hours. The white stucco of the facade reflects the brilliant illumination of the signwork to bring a cheery glow to the front. It should be noted that all possible space has been utilized for the selling of pictures.



THE PROSCENIUM appears to be three arches rather than one. This is merely an optical illusion created through the style of design. Because of the length of the auditorium, these arches were incorporated to shorten it. Tapering the width near the screen helps the illusion.

THE AUDITORIUM looking toward the rear. The side walls are acousti-pulp painted a dark green. Decorative designs grace each panel and are illuminated by a small fixture which appears to be a part of the design itself. Color scheme is blue, gold, buff and green.

THE FOYER greets the incoming patron with smartness, effectiveness, and beauty. A combination of plywood panel, large mirror, and sculptured mural creates a focal center that would be certain to enrich any room.

THE FRONT, in this daytime view, takes on a majestic air. The sheer white facade makes for an imposing structure. The signwork which does such a good job when illuminated at night is still an attraction in the daytime.

REFERENCE FACTS:

Size of Lot: 75 x 122
Seating Capacity: 867
Cost without ground: $65,000

Acoustical Treatment—Acousti Pulp. Manufactured by Acoustic Pulp, Inc.

Air Conditioning—Blower system.

Carpets—Figured Wilton. Manufactured by Mohawk Carpet Mills, Inc.

Chairs—Heywood-Wakefield full upholstered spring edge seat and back. Manufactured by Heywood-Wakefield Co.

Construction Material—Brick, concrete, steel.

Curtain Controls—Weaver. Manufactured by Weaver Mfg. Co.

Decorator—Heinsbergen Decorating Co.

Display Frames—Chromium, built in. Manufactured by Monarch.

Furniture—Lloyd chrome. Manufactured by Lloyd Manufacturing Co.

Lighting Fixtures—Zeon tubing throughout. Manufactured by Electrical Products Corp.

Projection Lamps—Peerless Magnarc. Manufactured by J. E. McAuley Mfg. Co.

Projection Machines—Simplex E-7. Manufactured by International Projector Corp.

Rectifiers—GE copper oxide. Manufactured by General Electric Co.

Rubber Mats—Manufactured by U. S. Rubber Co.

Screen—Walker white sound. Manufactured by Walker American Corp.

Sign and Marquee—Fabricated and erected by Electrical Products Corp.

Sign Letters—Wagner. Manufactured by Wagner Sign Service, Inc.

Sound—Simplex 4 Star. Manufactured by International Projector Corp.

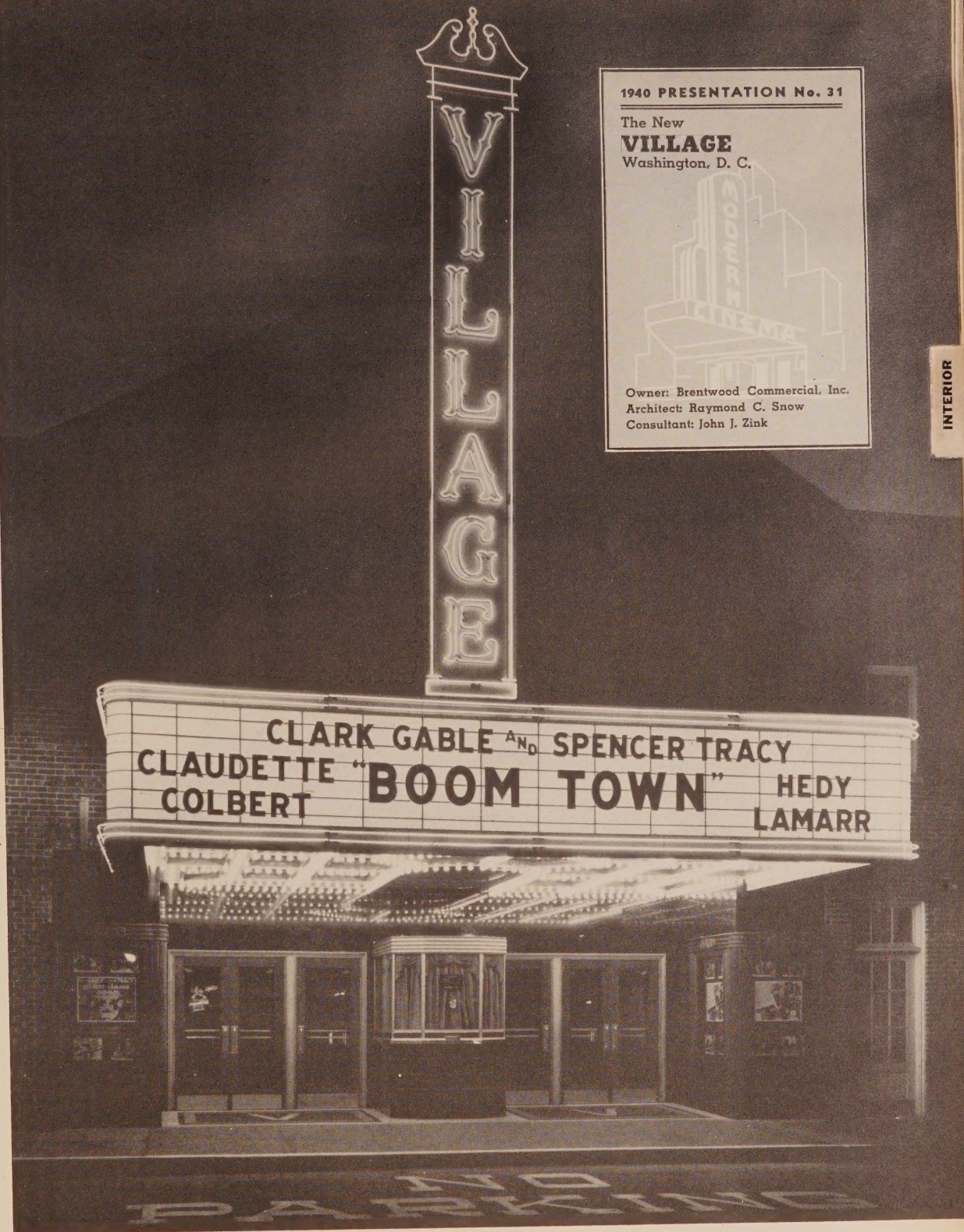
Supply Dealer—B. F. Shearer Co. of California and National Theatre Supply Co.

Ticket Register—Manufactured by General Register Corp.

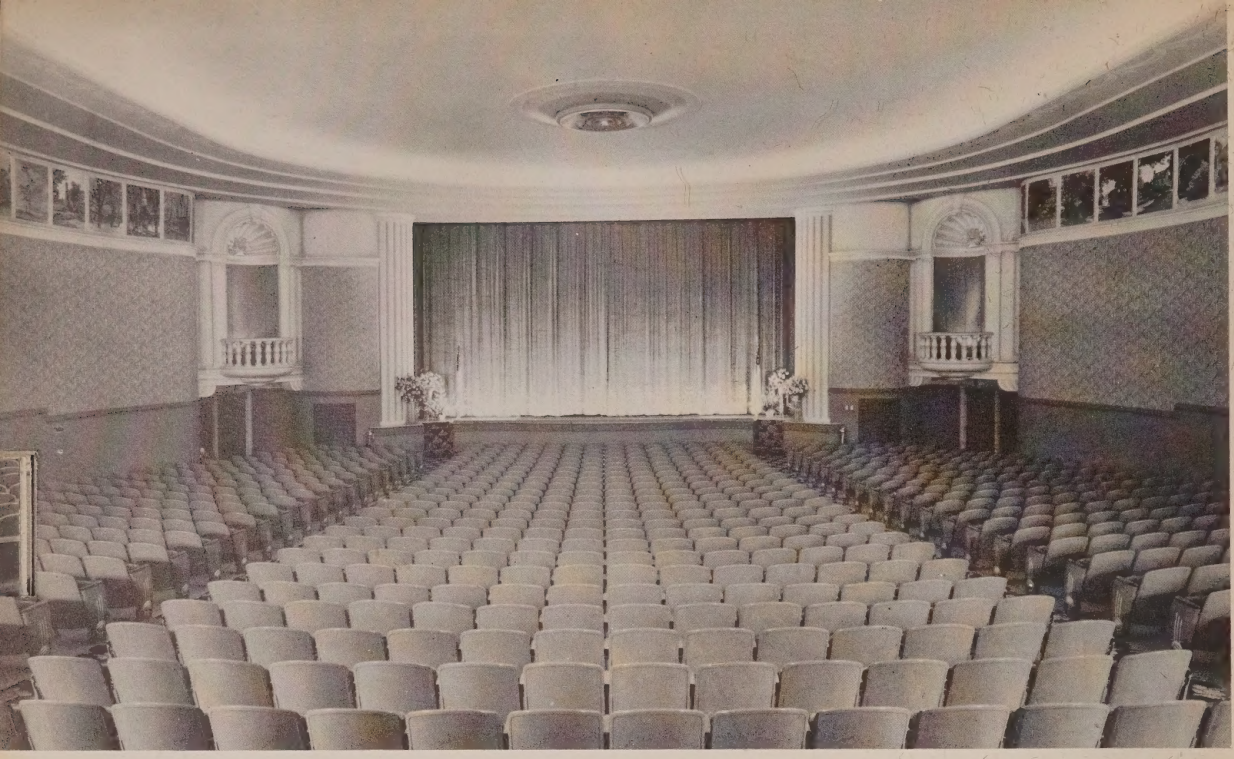
1940 PRESENTATION No. 31

The New
VILLAGE
Washington, D. C.

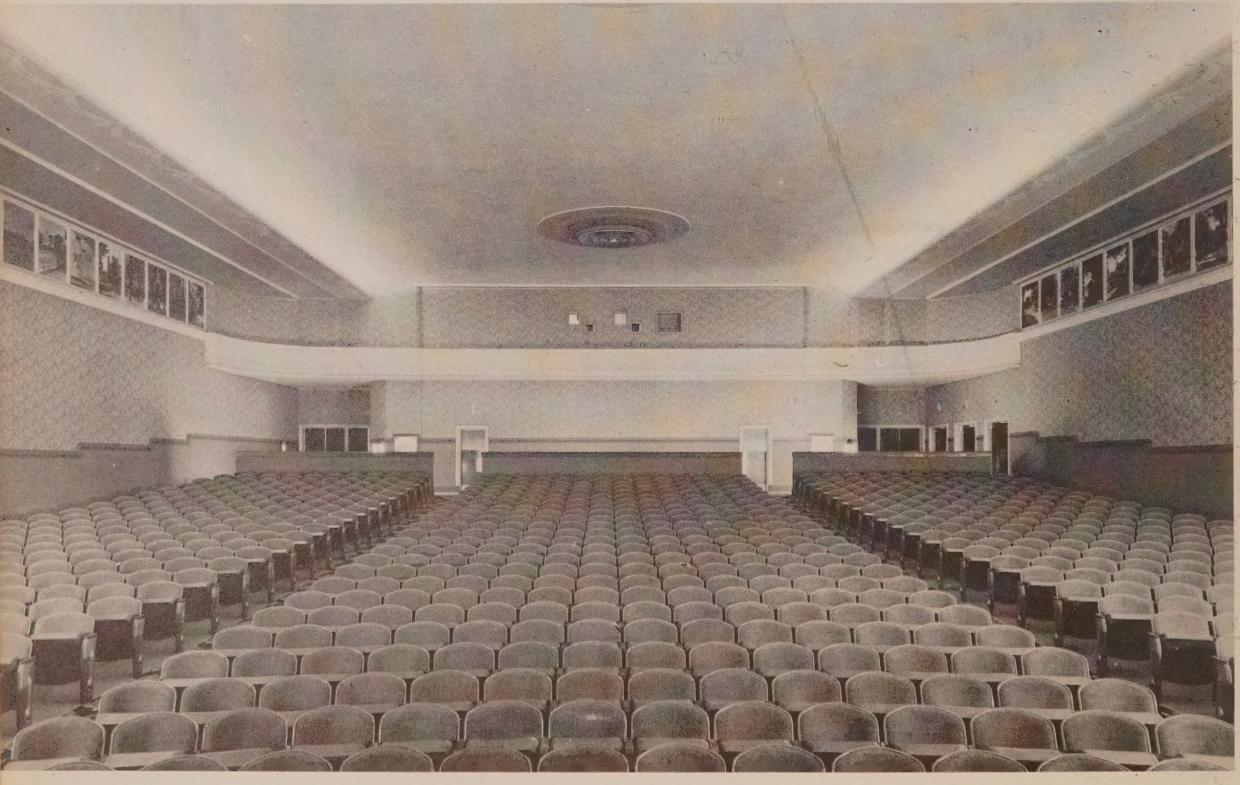
Owner: Brentwood Commercial, Inc.
Architect: Raymond C. Snow
Consultant: John J. Zink



THE FRONT, as it appears at night. This view gives no hint of the fine qualities of the colonial architecture embodied here, though a close glance will reveal some of the colonial designed cornice and brick-work usually associated with this type of design. The brilliance of the modern marquee and sign tends to give an air of modernity rather than that of early American design.



THE PROSCENIUM design is quite simple. The columns on either side are painted antique ivory with the main stage curtains in blue plush with applique. The balconies which flank the proscenium are of colonial design and are also painted in antique ivory.



THE AUDITORIUM, looking toward the rear. The walls are covered with blue damask with a dark blue wainscot. The panel near the ceiling contains photo murals which are a pictorial description of the theatre's locale. Seldom done in theatres this is a noteworthy feature.

REFERENCE FACTS:

Size of Lot: 114 x 132

Seating Capacity: 1000

Cost Without Ground: $100,000

Acoustical Treatment—Damask over Kimsul blanket insulation. Kimsul manufactured by Kimberly-Clark Corp.

Air Conditioning—York direct expansion by-pass system of 80 tons capacity. Manufactured by York Ice Machinery Corp.

Candy Machines—Berlo Vending Co.

Carpets—Blue, red and cream floral design. Manufactured by Alexander Smith & Sons Co.

Chairs—Rust leatherette seats and mohair backs. Manufactured by Heywood-Wakefield Co.

Construction Material—Brick, concrete, steel.

Curtain Controls—A.D.C. Manufactured by Automatic Devices Co.

Decorator—Paramount Decorating Co.

Display Frames—Manufactured by Display Frame Co.

Draperies and Stage Curtains—Silver, rust and blue. Manufactured by Paramount Decorating Co.

Generators—Hertner. Manufactured by Hertner Electric Co.

Lighting Fixtures—Manufactured by Chase Brass & Copper Co.

Marquee—Fabricated and erected by Structural Porcelain Enamel Co.

Projection Lamps—Peerless Magnarc. Manufactured by J. E. McAuley Mfg. Co.

Projection Machines—Simplex E-7. Manufactured by International Projector Corp.

Rubber Mats—Manufactured by The Goodyear Rubber Co.

Screen—Evenlite. Manufactured by Forest Mfg. Co.

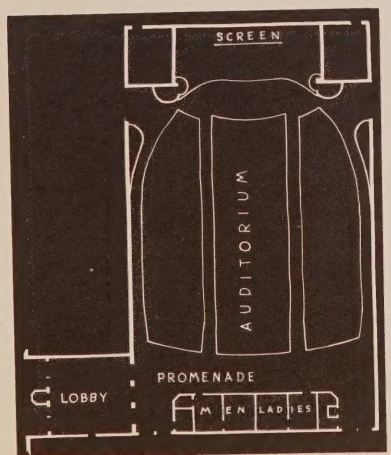
Sign—Fabricated and erected by Beacon Sign Co.

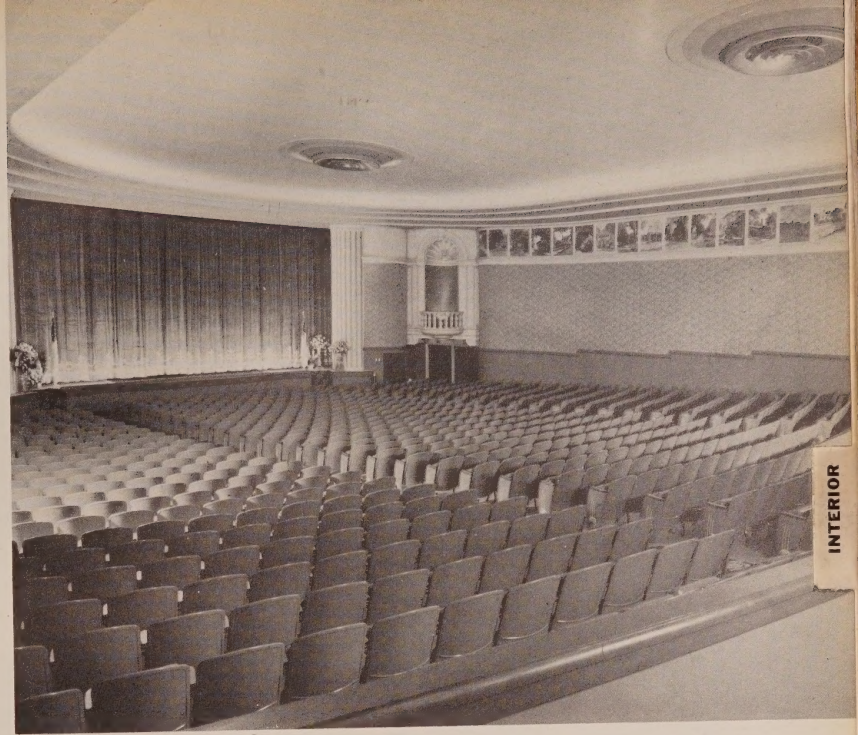
Sign Letters—Adler. Manufactured by Adler Silhouette Letter Co.

Sound—RCA. Manufactured by RCA Mfg. Co.

Supply Dealer—National Theatre Supply Co.

Ticket Register—Manufactured by General Register Corp.

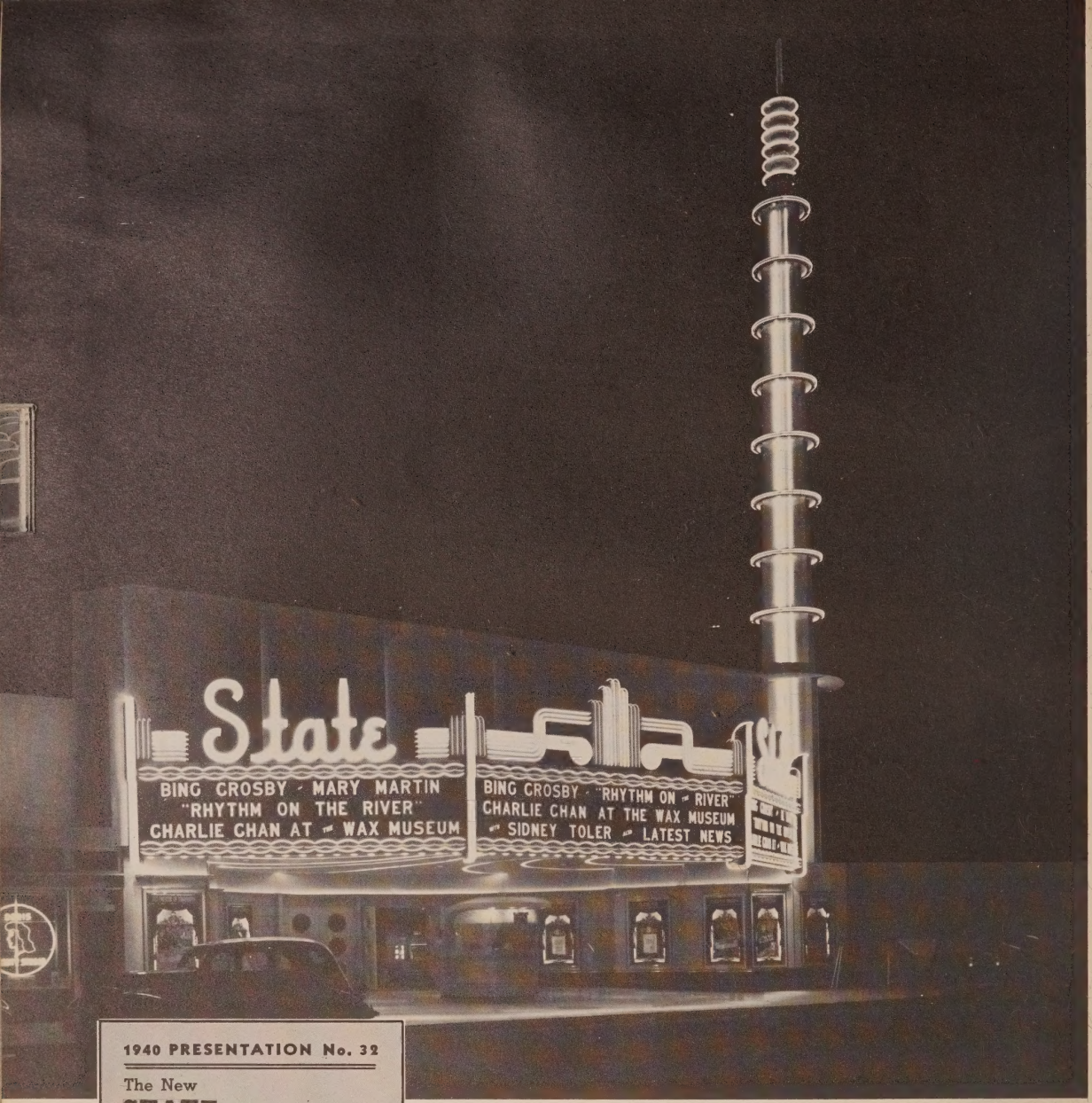




INTERIOR

THE AUDITORIUM, looking toward the stage. The ceiling is painted ivory with the stepping near the side walls being painted in three shades of blue. A better view of the photo murals mentioned earlier is obtained here.

THE LOBBY is spacious and the floor has been completely covered with rubber matting for safe footing. The walls have been covered with richly grained panelling and have a painted plaster wainscot.



1940 PRESENTATION No. 32

The New
STATE
San Diego, Cal.

Owner: Fox West Coast Theatres Corp.
Architect: S. Charles Lee

THE EXTERIOR, illuminated at night. The entire facade has been done in green and white. Neon tubes have been buried in the surfaces to light each plane of the building. On one side is a tower reaching 100 feet skyward, this tower is triangular in form and has discs accentuated by neon tubing, spaced at intervals. Note the streamlined boxoffice.

The theatre shown on these two pages reflects the double ingenuity of Charles P. Skouras, president of Fox West Coast Theatres, and S. Charles Lee, the company's internationally-known architect. The State is so new in its modern conception that a word picture would not do it justice. We describe it pictorially here.

THE FOYER, showing a sculptured mural of Pegasus. The walls here are ice blue, with the door drapes in royal blue.

REFERENCE FACTS:

Size of Lot. 99 x 194

Seating Capacity: 1000

Acoustical Treatment—Acoustite. Manufactured by Coast Insulating Co.

Air Conditioning—Manufactured by American Engineers & Contractors, Ltd.

Carpets—Crestwood Fluorescent. Manufactured by Alexander Smith & Sons Co.

Chairs—American Bodiform. Manufactured by American Seating Co.

Construction Material—Concrete and steel.

Curtain Controls and Trucks—Manufactured by Weaver Mfg. Co.

Decorator—M. Chavalas.

Display Frames—Manufactured to architect's detail.

Draperies and Stage Curtains—Blue and gold. Manufactured by R. L. Grosh.

Furniture—Neo modern design in blue. Designed by architect.

Lighting Fixtures—Manufactured by Solar Lighting Fixture Co.

Projection Lamps—Peerless Magnarc. Manufactured by J. E. McAuley Mfg. Co.

Projection Machines—Simplex E-7. Manufactured by International Projector Corp.

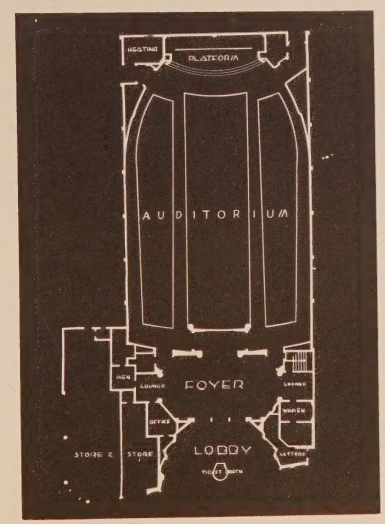
Screen—Walker white sound. Manufactured by Walker American Corp.

Sign and Marquee—Fabricated and erected by Electrical Products Co.

Sign Letters—Larson.

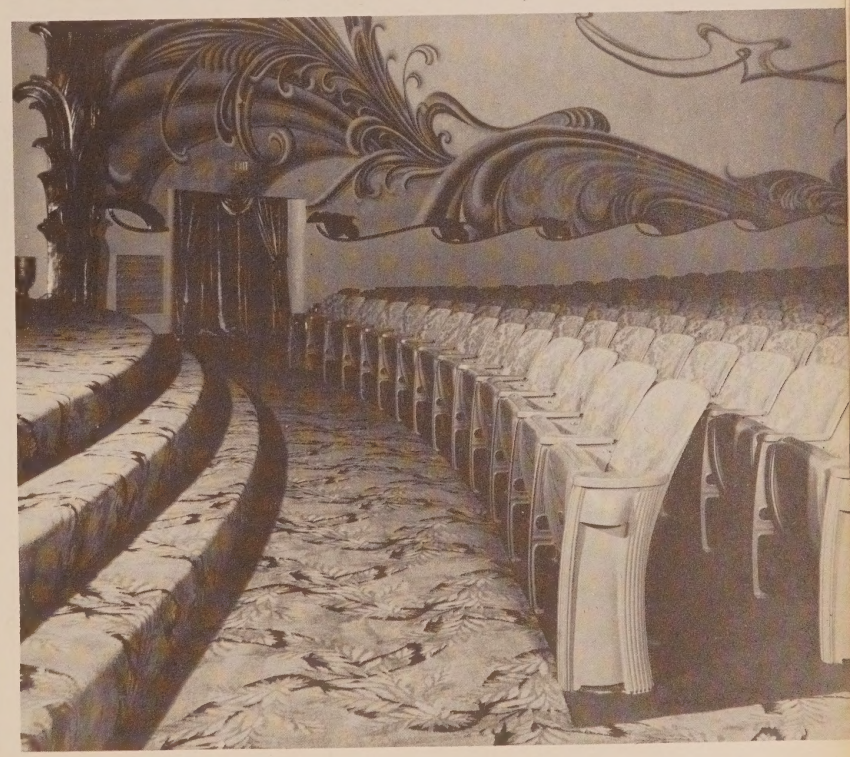
Sound—RCA. Manufactured by RCA Mfg. Co.

Supply Dealer—National Theatre Supply Co.



INTERIOR

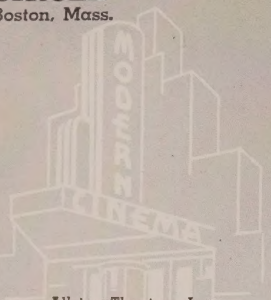
THE AUDITORIUM, looking toward the screen. This photo was made with the aid of black light, by which the entire auditorium is completely illuminated. Though no direct illumination comes from this lighting, it brings out the fluorescent painted decorations and the reflection from the decorations illuminates the room.



THE AUDITORIUM, looking along the first row of chairs. The carpet shown is fluorescent and is in colors of gold and henna. The black light which illuminates the carpet has been concealed in the end standards of the chairs. This carpet completely covers the stage and the steps leading up to it. The ground colors of the walls shown are yellow and sienna.

1940 PRESENTATION No. 33

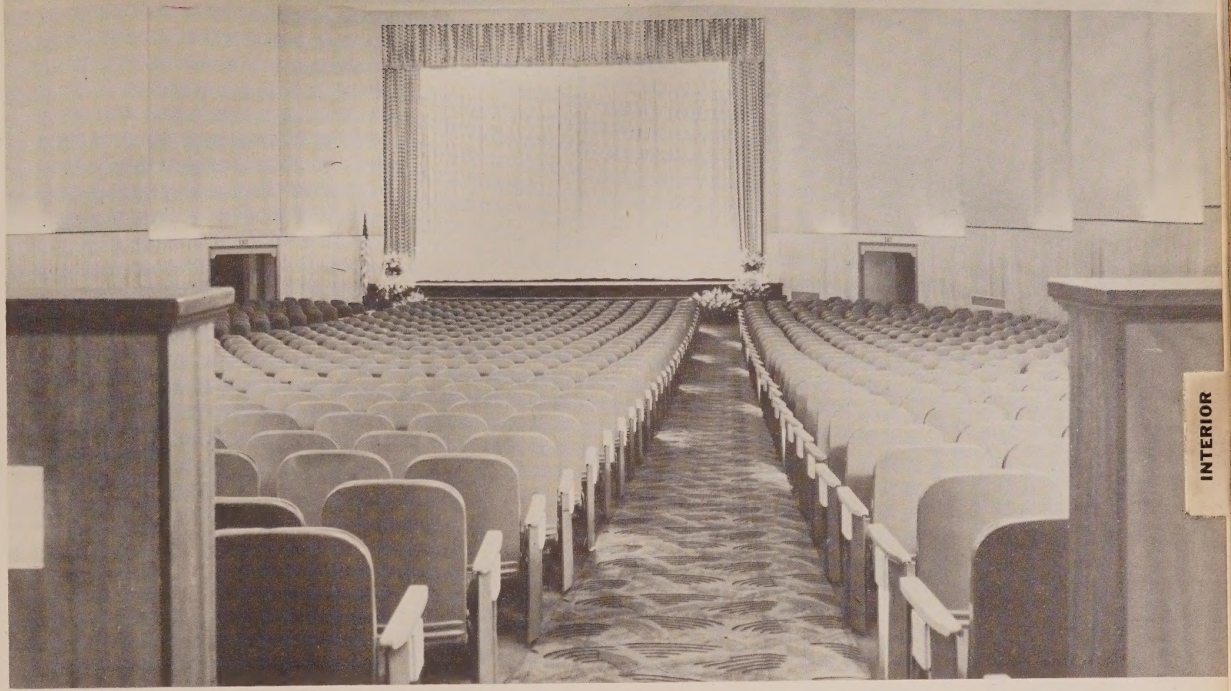
The New
CIRCLE
Boston, Mass.



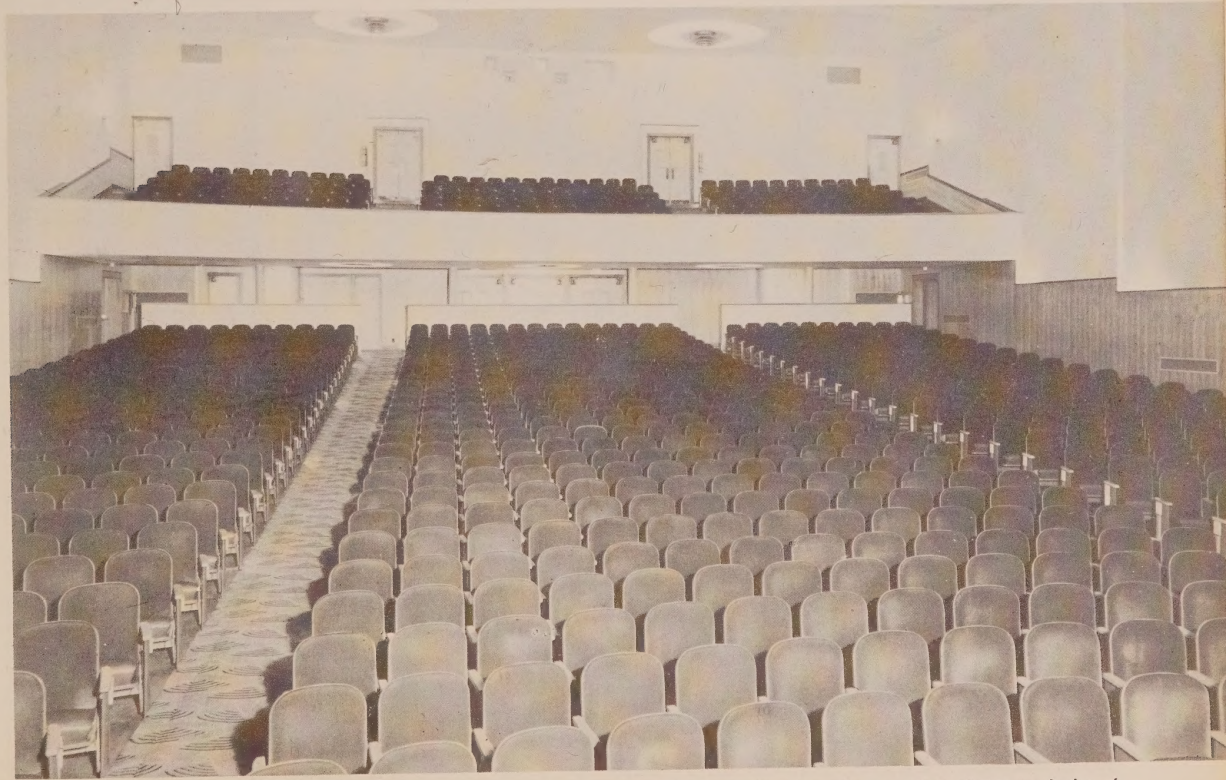
Owner: Allston Theatres, Inc.
Operator: M & P Theatres Corp.
Architect: Krokyn & Browne

This modern showplace is most simple in design. Many new features worthy of more than passing mention have been incorporated in this design and attention has been called to them by the staff. We salute architects Krokyn and Browne for a fine job.

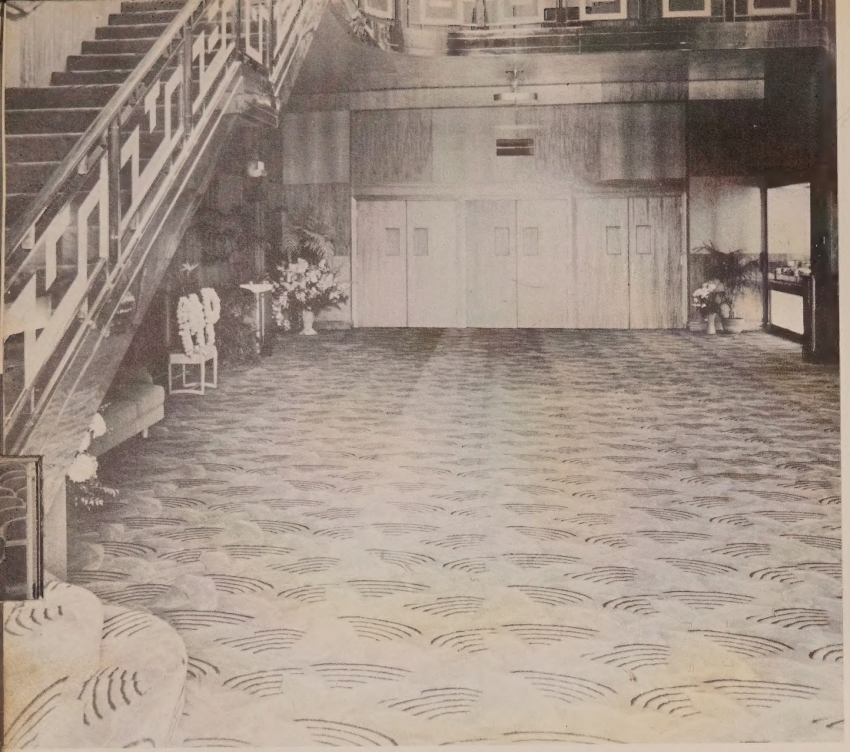
THE EXTERIOR, of which three different views are shown. The use of two marquees gives the impression, at first glance, that this house boasts of two entrances. However, this is not so, the marquee at the left is a replica of the one over the entrance, but acts only as an additional outside salesman and attracts attention which could not be gained by its twin.



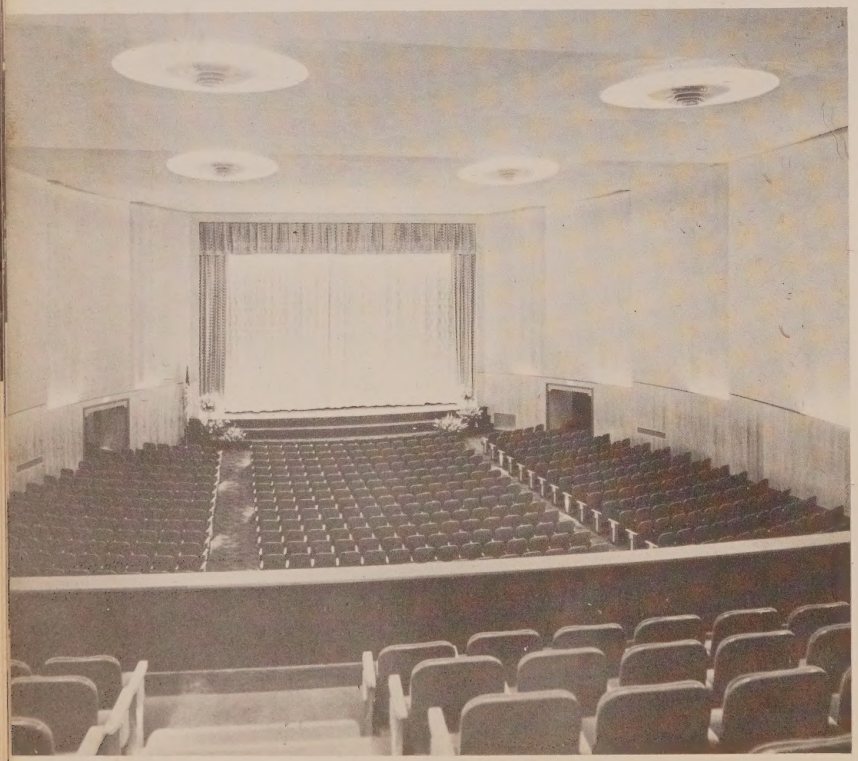
THE PROSCENIUM has no extensive decorations or intricate structural detail. The stage curtains of gold with green legs and valance are its only decorative touch. The aisle carpet seen in this view is of modern design in orange, black, and green.



THE AUDITORIUM looking toward the rear. The walls and ceiling have been finished with Stucoustic acoustical plaster in shades of color that vary from rust to tan. The wainscot and entire backwall, under the balcony, are of veneer wood panelling.



THE LOBBY has been neatly appointed and has a minimum of furnishings in keeping with the simple decorative scheme. The walls are covered with veneer panelling set in squares that vary as to grain and color.



THE AUDITORIUM, looking from the balcony. Indirect illumination has been placed over the wainscot in the curved hollows in the side walls. Ceiling lighting has been combined with the anemostats used for air distribution.

REFERENCE FACTS:

Size of Lot: 82 x 199

Seating Capacity: 1208

Acoustical Treatment—Stucoustic acoustical plaster. Manufactured by California Stucco Products, Inc.

Air Conditioning—Refrigeration system. Manufactured by Worthington Pump and Machinery Corp. Fans and blowers manufactured by B. F. Sturtevant Co.

Carpets—Orange, black and green. Manufactured by Philadelphia Carpet Co.

Chairs—Burnt orange leatherette seat and mohair back. Manufactured by Kroehler Mfg. Co.

Construction Material—Brick, structural steel, concrete.

Curtain Controls—A.D.C. Manufactured by Automatic Devices Co.

Decorator—P. Holdenson and Krokyn & Browne.

Draperies and Stage Curtains—Gold with green legs. Manufactured by Stage Craft Studio.

Furniture—Wheat maple upholstered in green plush.

Generators—Hertner. Manufactured by Hertner Electric Co.

Lighting Fixtures—Vimlite. Manufactured by Vim Lite, Inc.

Projection Lamps—Brenkert. Manufactured by Brenkert Light Projection Co.

Projection Machines—Motiograph. Manufactured by Motiograph, Inc.

Rectifiers—Forest. Manufactured by Forest Mfg. Corp.

Rubber Mats—Manufactured by U. S. Rubber Co.

Screen—Evenlite. Manufactured by Forest Mfg. Co.

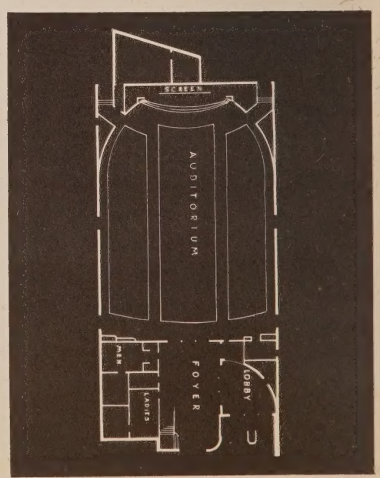
Sign and Marquee—Donnelly Electric & Neon Co.

Sign Letters—Adler. Manufactured by Adler Silhouette Letter Co.

Sound—Simplex 4 Star. Manufactured by International Projector Corp.

Supply Dealer—Standard Theatre Supply Corp.

Ticket Register—Automaticket. Manufactured by General Register Corp.



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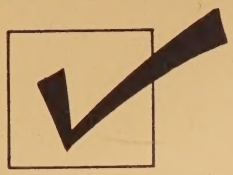

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- ☐ Air Conditioning Distributors
- ☐ Air Conditioning Filters
- ☐ Amplifiers
- ☐ Amplifier Tubes
- ☐ Architect

- ☐ Batteries
- ☐ Bookkeeping System
- ☐ Booth Supplies
- ☐ Boxoffice
- ☐ Boxoffice Equipment
- ☐ Business Boosters
- ☐ Bathroom Accessories
- ☐ Building Materials
- ☐ Building Service

- ☐ Cabinets
- ☐ Cans
- ☐ Carbon Adapters
- ☐ Carbons
- ☐ Carpets
- ☐ Chair Accessories
- ☐ Chairs
- ☐ Changeable Letters
- ☐ Changeovers
- ☐ Coin Changers
- ☐ Color Wheels
- ☐ Condensers
- ☐ Converters
- ☐ Curtains
- ☐ Curtain Controls
- ☐ Curtain Track
- ☐ Cycloramas

- ☐ Decoration
- ☐ Deodorants
- ☐ Desks
- ☐ Dimmers
- ☐ Door Hardware
- ☐ Draperies
- ☐ Drapery Materials
- ☐ Drinking Cups
- ☐ Drinking Fountains

- ☐ Effect Machine
- ☐ Exit Signs

- ☐ Fans
- ☐ Film Cases
- ☐ Fire Extinguishers
- ☐ Fire Hose
- ☐ Fire Shutters
- ☐ Flashlights
- ☐ Fluorescent Paint
- ☐ Floodlights
- ☐ Floor Lamps
- ☐ Flooring Materials
- ☐ Fluorescent Lighting
- ☐ Footlights
- ☐ Frames
- ☐ Front Re-building
- ☐ Furniture
- ☐ Flooring

- ☐ Generators
- ☐ Glass Sign Letters
- ☐ Glass Brick

- ☐ Hand Rails
- ☐ Hand Dryers
- ☐ Hardware
- ☐ Hearing Aids
- ☐ Heating Equipment
- ☐ Heating Systems

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- ☐ Interior Redecorating
- ☐ Insulation

- ☐ Janitor Supplies

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- ☐ Kleig Lights

- ☐ Linoleum
- ☐ Ladders
- ☐ Lamps
- ☐ Lenses
- ☐ Lighting Fixtures
- ☐ Lighting Engineers
- ☐ Lobby Frames
- ☐ Lobby Hardware
- ☐ Lobby Redecorating
- ☐ Lobby and Lounge Furniture

- ☐ Marquee
- ☐ Mirrors
- ☐ Murals

- ☐ Outdoor Signs
- ☐ Ozite Carpet Padding

- ☐ Paints
- ☐ Painting
- ☐ Panel Board
- ☐ Pedestals
- ☐ Photo Electric Cells
- ☐ Popcorn Machines
- ☐ Porcelain Enamel Front
- ☐ Poster Frames
- ☐ Premiums
- ☐ Plumbing Fixtures
- ☐ Projection Lamps
- ☐ Projectors
- ☐ Rectifiers
- ☐ Rectifying Tubes
- ☐ Reels
- ☐ Reflectors
- ☐ Refrigerating Equipment
- ☐ Rewinders
- ☐ Rewind Tables
- ☐ Roofing Material
- ☐ Rubber Mats

- ☐ Safe
- ☐ Screen
- ☐ Seats
- ☐ Showcard Paints
- ☐ Sign Flashers
- ☐ Sign Letters
- ☐ Signs
- ☐ Silhouette Letters
- ☐ Slides
- ☐ Sound Equipment
- ☐ Sound Service
- ☐ Speakers and Horns
- ☐ Spotlights
- ☐ Stage Draperies
- ☐ Stage Hardware
- ☐ Stage Lighting
- ☐ Stage Rigging
- ☐ Stair Treads
- ☐ Standee Posts
- ☐ Stereopticons
- ☐ Switchboard
- ☐ Structural Glass

- ☐ Theatre Hardware
- ☐ Theatre Games
- ☐ Theatre Premiums
- ☐ Ticket Booths
- ☐ Ticket Chopper
- ☐ Tickets

- ☐ Uniforms
- ☐ Upholstering Materials

- ☐ Vacuum Cleaners
- ☐ Vending Machines
- ☐ Ventilating

- ☐ Wall Covering
- ☐ Wind Breaks
- ☐ Work Lights
- ☐ Water Proofing

OTHER ITEMS

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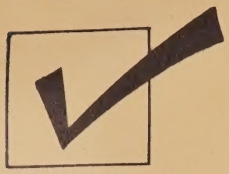

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- ☐ Theatre Games
- ☐ Theatre Premiums
- ☐ Ticket Booths
- ☐ Ticket Chopper
- ☐ Tickets

- ☐ Uniforms
- ☐ Upholstering Materials

- ☐ Vacuum Cleaners
- ☐ Vending Machines
- ☐ Ventilating

- ☐ Wall Covering
- ☐ Wind Breaks
- ☐ Work Lights
- ☐ Water Proofing

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The Theatre Interior

Seats, Spacing and Sightlines

For the first time in the history of the theatre industry—a leading engineer has laid out a definite formula for arriving at perfect sightlines, floor slopes and seating comfort.

BY F. W. ALEXA

A TRADE publication in a recent issue, showed that in 1939 the average cost of a theatre having a seating capacity of 672 was $89 per chair. With the cost of the theatre broken down to the term of "*chairs*" (which actually means source of income), it is important that the chairs represent the maximum in seating comfort, correct back to back spacing, and proper installation on the floor to give the patron good vision.

Next to seating comfort, unobstructed vision of the stage or screen is of vital importance. Until recently, this detail was neglected and more attention was given to the ornamentation of walls, ceilings, and costly chandeliers. Architects and theatre owners have come to realize more and more that comfortable seating, correct sight lines, and good entertainment are among the most important factors contributing to steady, profitable, box-office returns.

The overall construction cost which amounts to $89 a chair is actually the investment from which the theatre operator must get his returns. This $89 investment per chair is the important factor to consider and not just the cost of the chair itself. Each chair should do its part as a silent salesman ready to serve the theatregoer by providing the best in comfort and good vision. That is why it often pays in the long run to spend a few cents or perhaps a dollar more for a chair if it will provide more comfort and better vision, and result in lower upkeep costs.

THE questions of comfort and low maintenance costs are best answered by the chair manufacturer. It is the architect who is responsible for good vision in the arrangement and spacing of the chairs and the determination of the floor slope. In this stage of planning the auditorium the architect comes to one of the most difficult problems in designing a motion picture theatre—the floor slope which will meet all conditions satisfactorily. There is a great deal more to it than simply "providing an inclined floor." Many architects have learned about sightlines, floor slopes, maximum seating capacities, and other technicalities through long experience and often at the expense of costly mistakes.

Similar problems are involved in designing school auditoriums which today, must have many of the same features found in a modern theatre. Such auditoriums are used by the community as a combination "legitimate" and motion picture theatre as well as for other activities. In many states, the building codes rule that school auditoriums having projection booths come under the classification of a theatre.

WHEN we consider the problems of sightlines, floor slopes and seating comfort, we find that all three are so related that it is impossible to solve one without taking the others into consideration. The main set of factors with which we must work is that which concerns the seated person, and the area to be viewed. When this is recognized certain standards can be established as follows:

A. Average height of a person seated.
B. Average height of a person's eye when seated.
C. Distance from the viewer to the object or area viewed.

The average eye level is about three feet eight inches from the floor, and the head height is four feet, one-half inch. (See diagram).

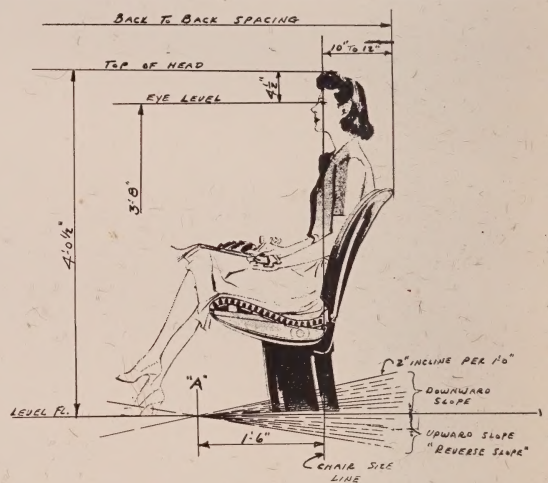

DIAGRAM 1

Viewing distance: Viewing distances will vary depending upon the type of theatre. In the legitimate theatre, the first row of chairs can be as close to the stage as possible. However, in the motion picture theatre the location of the first row is governed by the size of the picture image on the screen. The screen size, in turn, should be determined by the distance of the last row from the screen. The picture image must be small enough for good vision from the first row without eye strain and yet large enough so that it can be seen clearly from the last row. Picture image distortions, such as elongation, foreshortening and tapering involve three factors:

1. Photographing
2. Projection
3. Viewing angles

It is not the purpose of this article to discuss the first two items. We shall try to show that distortion can be minimized by good planning.

A survey of many theatres by the Society of Motion Picture Engineers showed that the minimum viewing distance (screen to last row) was 4.65 times the picture image size, the maximum was 5.85, and the average was 5.20.

It is considered good practice to have the picture image equal at least to one-sixth of the distance from the screen to the last row. It should be remembered that the screen must be larger than this determined picture image size as allowances have to be made for projection distance and projection angles. It is advis-

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able to reduce the picture image slightly below the maximum width and have a brighter screen. This is more desirable than a large picture as it reduces excessive magnification and distortion as well as variation in the screen brightness. In the past, the first row was located as close to the screen as possible, being controlled only by the building code requirement that a five-foot clear passage be maintained across the front of the auditorium. With the growing recognition that good vision for all seats means more box-office returns, this condition is fast disappearing. Now it is recognized by practice that the first row should be located not less than 1.2 times the width of the picture image. With these standards established we can now show how they influence the floor slope of the theatre.

Diagram 1. Here is illustrated the normal sitting position of the occupant of a chair on a level floor. The measurements shown are for the average. The broken lines radiating from point "A" indicate the method used by the better chair manufacturers in casting the chair standards. Seat supports are called "standards." End or aisle standards, as the term implies, come at the row ends or aisles. Those that are common for two seats are called middle standards. These standards or chair legs are cast for level floors, and for sloping floors in increments of one-quarter inch for both the conventional (downward slope) and "reverse" incline (upward slope). Note the change of foot positions for both types of floor slopes from that of the normal.

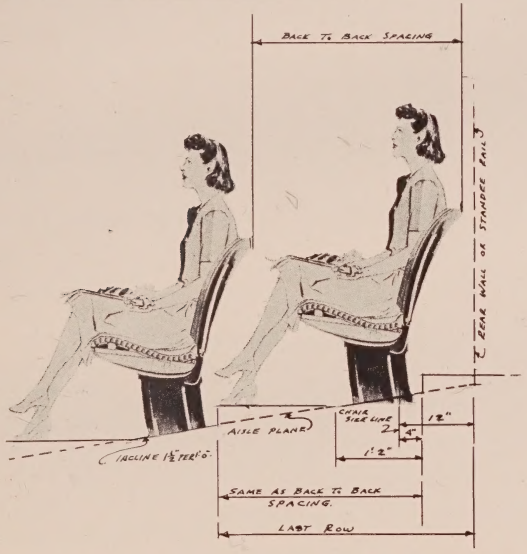


DIAGRAM 1-A

This point "A" is located so as to maintain a constant seat height for all floor slopes. To insure maximum foot comfort and easy ingress and egress, the floor incline normally should not exceed one and one-quarter inch per foot. When the downward slope or incline exceeds the recommended slope, platforms which are level or partially level should be introduced as illustrated under diagram 1-A. Normally, reverse floor inclines should not exceed one inch per foot.

NOW let us take for a hypothetical problem the seating of an area having a depth of 94 feet and widths of 54 feet six inches —58 feet and 86 feet for motion picture entertainment. The three different widths were selected to illustrate three arrangements commonly used.

A. Three bank arrangement—center bank and two small banks with two intermediate aisles (this is most common.)
B. Two bank arrangement with center aisle and wall aisles.
C. Three bank arrangement with intermediate aisles and wall aisles.

The building code of the state, city or town governs the seating capacity, limits the number of seats between aisles, and determines the minimum spacing of rows. As these building codes are not uniform, we must be governed by the local code for these requirements. (In this article we shall follow the New York City building code).

Before the seating layout and floor slope can be determined, the type of chair should be selected. Various types of chairs require different back to back spacing as well as varying chair widths. Today, because of modern scientific designing, theatre chairs designed on a scientific posture basis provide more comfort in less chair space. When the average type of chair is used, the minimum back to back spacing of 32 inches as required by law will give ample comfort. However, when a thicker spring back chair is used, the back to back spacing should be increased proportionately. The width of the average chair used today is 20 inches. Chairs are made in sizes of 19 inches, 20 inches and 21 inches, measured center to center of chair standards. These sizes are measured on the chair size line or datum line. The relation between the back, seat, and standards is determined from this line. In section, it coincides with the line of the occupant's eyes as shown in Diagram 1. The chairs can be installed on a curve or in straight rows. Whether curved or straight, the rows should be parallel. Non-parallel rows cause many difficulties in minimum back to back spacing and the floor slope.

THE first step in planning is to determine the size of picture image in relation to the depth of the auditorium, and, as suggested in preceding paragraphs, this image size should be at least one-sixth of the depth or overall distance. Going back to our hypothetical case with 94 feet as the depth, we get 15 feet eight inches. To locate the first row of chairs, we take 1.2 times the picture image which in round figures gives us 18 feet nine inches, leaving 75 feet three inches for chairs. This area will accommodate 29 rows with minimum back to back spacing of 32 inches, leaving a surplus of 15 inches. In our layout, lines or rows will now represent the chair datum or chair size-line and, in section, the eye line from which sight lines will be determined. From the last chair-size-line an additional 12 inches is required for allowance of the chair back and at the same time establishes the location of the standee rail or rear wall. (The remaining three inches can be used to increase the distance of the first row from the screen).

With the first and last rows established, the next step is to plan the seating and width of aisles. According to the code, the aisles must start at three feet and increase one and one-half inches in width for each five feet of aisle length. Therefore, the aisles in this case would start at three feet and increase to four feet 10 inches. However, the code allows an average aisle width, provided exits occur at each end of the aisle, which in this case would be three feet 11 inches.

For the first arrangement, "A," a center bank of 14—20-inch chairs will require a floor space of 23 feet eight inches (four inches plus the sum of the chair sizes) and 12 feet for each of the side banks.

At this point, it should be determined which seats must be eliminated because of distortion. Diagram 2 shows clearly how the viewer's perspective is affected when he is seated at different viewing angles.

It is clearly indicated from observation points B and C, with measurements taken at right angles of observation, (as shown between figures one-two-three and four) that the entire screen or image is not visible. From B the image appears only nine feet wide when viewed from 22 feet four inches from the screen, and to C the picture image appears nine feet eight inches wide. The subjects and detail will appear in the same proportion. From position "A" and "A1" in front of and on the center line with the screen, the image appears in proper proportion, regardless of the distance, and therefore is free from viewing distortion.

The curvature of the first row should not place the viewer in such a position as to compel him to view the screen from an extreme side angle. There is no hard and fast rule known to the writer that governs this curvature. However, experience suggests that a safe rule in determining the radius of the first row is to figure not less than twice the width of the picture image.

WITH the plan fairly well established, the floor slope can now be determined. The ideal floor slope is one which will give all rows unobstructed vision, at the same time having a minimum amount of incline. For theatres where only motion pictures are shown, this ideal condition can be obtained by providing a combination of downward and upward sloped floor. This is possible because the bottom of the picture image can be placed as high as six feet six inches from the floor level of the first row without causing any discomfort or eye strain to the viewer. This arrange-

ment is not feasible in some theatres or school auditoriums where the area to be viewed is on a different and much lower plane, the stage height being three feet four inches above the auditorium floor or four inches below the eye level.

inches and the head level as four feet one-half inch. A point "T" (12 inches up from the bottom of the picture image) is taken as tolerance. All sight line clearance should not come above this point.

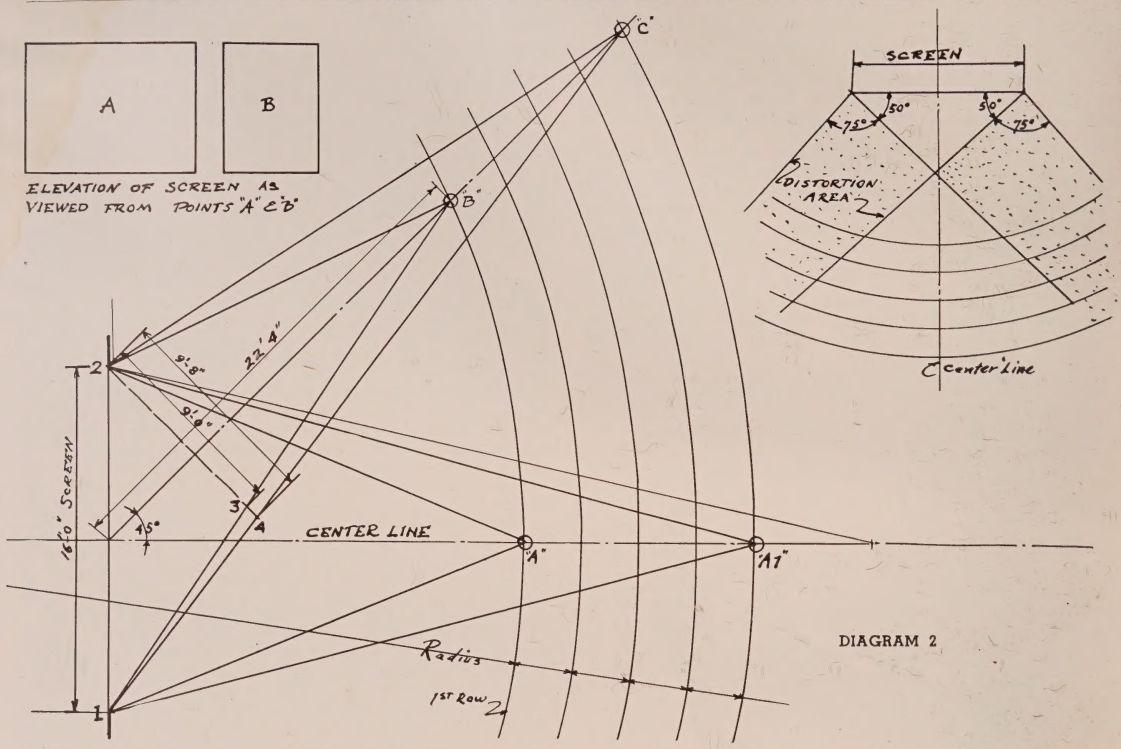


DIAGRAM 2

Unobstructed vision naturally means clear vision. One row obstruction, which is the next best, means that the row directly in front interferes while the second row ahead does not. Staggered seating can be introduced so as to have unobstructed vision with sight lines figured on two row clearance instead of one row clearance. Staggered rows, however, give an uneven aisle line and in some cases the building department has objected to them. To overcome the uneven aisle line, it is suggested that three different size chairs be used, for example, one row with 14—20-inch chairs, the next with 13 chairs of 21-inch and 22-inch widths. In some of the recent theatres where the staggered effect has been used, the chair sizes are all the same width, but in order to overcome the uneven aisle line the two end chairs in the odd rows have been made 30 inches wide. These chairs are known as "love seats" and, for one reason and another, many theatregoers object to them. Here, again, the building department may have some objection as many building codes specify a limit of 14 persons to a row between aisles and this type of chair increases the seating capacity to 15 persons a row. With these objections in mind, many theatre owners prefer to use the three-chair size scheme.

Diagram 3 shows what happens to the floor when a point on the stage is observed with unobstructed vision for all rows. The floor becomes too steep and is not practical.

Diagram 4 shows the floor condition when one row obstruction is used in figuring the sight lines. This method gives the best practical results and will be used to determine the floor slope in our problem here.

Diagram 5 illustrates the effect a high screen position has on the floor. By this method the "reverse" slope is determined.

Diagram 6 shows graphically the method to be followed in determining the floor slope, using any of the three seating layouts and one row obstruction as the factor for sightline clearance.

The bottom of the picture image is taken at a height of one foot six inches above the stage. The eye level as three feet eight

A line drawn from this point to "I" (eye of occupant) of the first row represents the sight line for the first row. Now draw a line from "T" through "H" (top of head first row) until it inter-

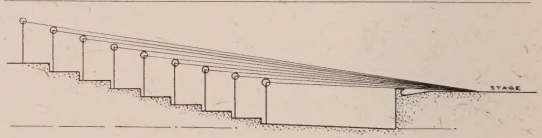


DIAGRAM 3

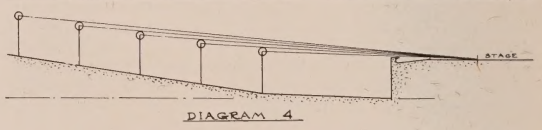


DIAGRAM 4

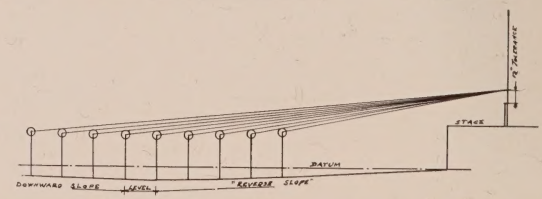


DIAGRAM 5

sects vertical line of the third row. The point where these two lines meet determines the eye position for this row. Now measure down on a line 18 inches forward to the eye line, three feet eight inches from the eye level. (Also see Diagram 1). This will establish the floor elevation on which this row should set. Repeat this process for the remaining rows.

TO determine the elevations of the floor slope mathematically, the following method of procedure should be followed:

Assume that the floor on which the first row sets is level and from this level floor establish the stage height as three feet four inches or three feet six inches (the standard stage height is three feet four inches). The picture image should be one foot six inches to two feet above stage. If the auditorium is to be used for both motion pictures and vaudeville, the lower picture height should be used. Not more than 12 inches of tolerance above "T" should ever be entertained. All sight line clearance should fall, therefore, below T-1.

Draw lines "I," "I-1," "I-2," etc. These lines represent the chair datum line and eye line. It may well be mentioned here that as the spacing of these lines (back to back measurements) increases, the floor slope becomes flatter. In balconies, the reverse is true. Next, on "I" establish eye level of three feet eight inches and head height as "H"—four feet one-half inch. Now draw line "S" from "T" to "I"; this line represents the sight line for the first row. Draw "S-1" from "T" to "I-1" through "H" which represents sight line for third row. Next draw datum line "D" through "H" parallel with stage level and determine the difference in elevation between the line and that of the focal point "T" which is identified as "C."

The next step is to divide the first row distance "A" by the two row spacing "B"; the result of which is divided into "C" which in turn equals "E." This calculation will then give eye level of the third row. In other words we have an equation such as this:

$$\frac{C}{\left(\frac{A}{B}\right)} = E$$

Substituting figures (decimals of a foot) for letters we have:

$$\frac{.7917}{(19.0')} = .220 \text{ feet or } 2\tfrac{5}{8} \text{ inches eye level below datum line}$$
$$(5.33')$$

4-0½" (datum) minus (3'8" + 2⅝") = 1⅞" or "G" the required elevation of floor slope for third row so as to observe focal point "T."

Note point "T" can be adjusted up to "T-1" to keep floor slope to minimum.

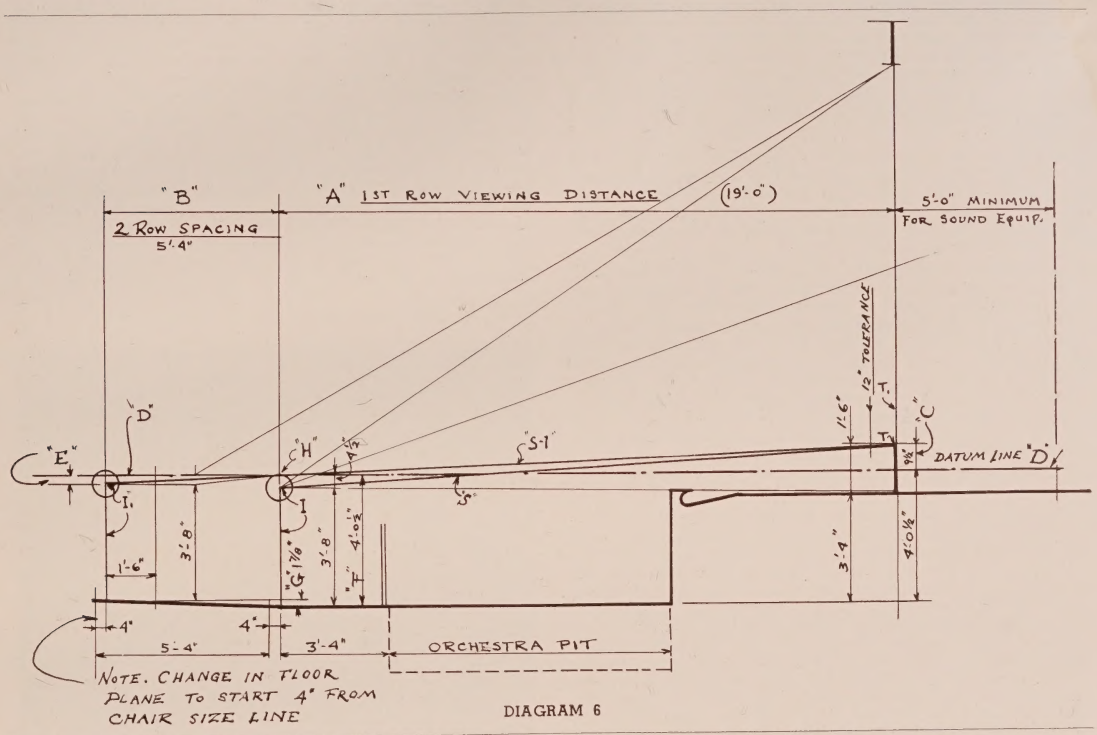
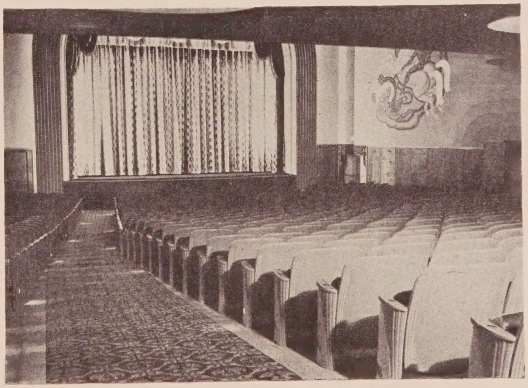


DIAGRAM 6

Repeat the process with "D" drawn through "H-2" of third row, and etc., for determining the rest of the floor.

This same process is to be followed to determine required elevations for changing floor planes of reverse floor slope.



AN INTERESTING SEAT INSTALLATION recently accomplished in the Center Theatre, Fall River, Mass. Note the gradual aisle turn and moderate floor pitch.

Color Schemes and Decorative Effects

How color can heighten or subdue a room—properly handled decoration enrich it—and over-decoration kill it.

BY ARMANDO T. RICCI

THE term "interior decoration" is misleading and the cause of much of the mis-interpretation of the decorative idea for which it stands. Love of beauty and the desire to create is a primal instinct in any decorator. The decorator, architect, and owner should take personal pride and pleasure in decorating a theatre, if it is to be an artistic one, and the making of such a theatre involves an understanding of certain colors and design principles.

THERE are two distinct classes with whom the owner and architect must deal; the true and talented theatre decorator, and the one who professes to be a decorator because he knows how to brush paint or hang draperies or lay carpets. There are principles of choice and arrangement by which a decorator must be governed, whomever he may be.

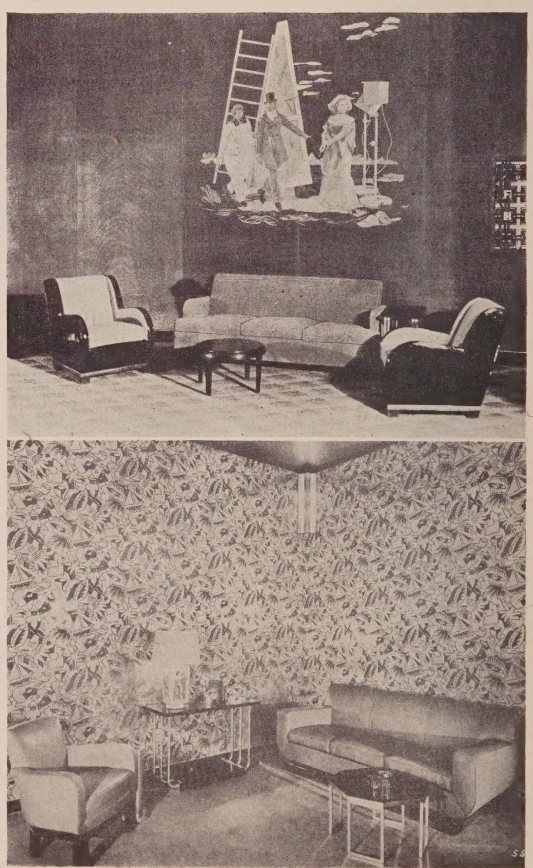
A decorative auditorium is a personal or combined expression of the decorator and his associates' taste in the combining of color, design, draperies, carpets, and lighting; it is impossible for the untrained decorator to appreciate such an expression. Only an artist can be trusted in decorating a room, and, therefore, for best results, theatre owners and architects should employ trained decorators for this work. This is true in any profession or trade. An employer desiring a mechanic, engineer, or draftsman will employ the most experienced person, so why not an experienced decorator? An architect's only way to express an idea which has been drafted on paper is to use trained decorators to execute these ideas, men who understand how to translate drawings and speak the language of art.

I have found many so-called decorative theatres where the decorator has placed applied decorations, patterns, color, and draperies anywhere, in any relation one to the other, and still has called it a decorative room. Nothing is further from the truth. There are others who try to crowd a room with expensive decorative walls and ceilings, quantities of draperies, figured carpets, painted realistic human figures, birds and flowers strewn here and there (calling them murals), and still call the room highly decorative. This, too, is a fallacy. Not only is it not decorative to use too much color and too many decorative themes, but it prevents any one of the themes from having a decorative effect. Neither these things nor their cost, show, vogue, nor period are in the least concerned with an expression of the decorative idea.

DECORATION implies, first, something to decorate. By this I mean some definite form or arrangement to which decoration is to be applied and the reason for applying it. It is not because one has a theatre auditorium that the decorator rushes to pile something onto or into it, but because it needs some color or decorative designs on the walls and ceilings. This necessitates certain colors in paint, draperies, carpets, seat upholstery, and lighting to make the room fulfill its function and make it a beautiful unit when completed. The room is to fulfill its function. The matter of functions is fundamental in applied art. The room and most objects in the room exist for use first. The quality of beauty is desirable and essential in fulfilling the highest ideal, but however beautiful the scheme is, if the functional idea is not adequately and fully carried out, the art from the standpoint of theatre decoration is but one half expressed.

LET us ask what the auditorium use is? The only sensible answer is, "For viewing motion pictures and to view in comfort and rest." Any decoration found therein which detracts from this idea is not only a non-essential, but a detriment to the realization of the ideal. When a patron enters the auditorium he or she expects to see, first of all, a clear projection on the screen, then comfortable seats, and, last, a good, simple, restful, harmonious decorative scheme.

Concerning the question of decorations, some very elementary, yet vital, statements may be made. One of the old masters said, "Decoration must never be applied where use is sacrificed in its application." How often do we see the walls of an auditorium decorated with murals which are gaudy and poorly executed. Decorations should not become apparent as additions with the sole purpose of showing themselves, because they lose the decorative quality. It should be remembered that in any decorative question, decoration does not exist for itself but for the entire auditorium. For example, realistic paintings of human figures, flowers, birds, etc., should not be expressed on the walls and ceilings when the real purpose of the room is to be used in projecting pictures, for that is the main and only reason your patrons pay admission—not to view an art gallery, especially when the decorations are badly executed. The question is really one of seeing the structure clearly in relation to its need for decorative treatment. The atrocities committed in theatre decoration are often a sincere attempt to create, by poor decorators who do not possess artistic talent in their ignorance and overzealous desire for beauty. I do not want to strip any auditorium of all decoration, but my thought is to try and keep it dignified by simple, bold, harmonious decorative designs and colors.



SKILLED DECORATION. The restrained use of a single Louis Bouche mural in a corner of the grand lounge at Radio City Music Hall as compared to Donald Deskey's use of an overall pattern in the Nicotine Room of the same theatre.

COLOR plays the most important part in a room and especially in a theatre auditorium, for the patrons are laymen in the artistic sense. The decorator must and should understand color, not only in daylight but under artificial light. Colors are very deceiving and change under different lights. Blue turns to green, violet becomes red, other tones of violet appear gray. These are natural changes and are due to the effect which one element in color produces on another when in connection with it. A decorator should always work with the lighting engineer. From the point of view of design, one must consider the placing of light units. Lighting should give emphasis to the decorative plans of the interior as much as color decoration.

NOW to classify theatres—the old renovated theatre and the newly built house. I have found in my 20 years' experience that a theatre which is being designed by a theatre architect should be approached in the following manner:

The architect, in my opinion, has formulated set ideas for the design and decorative scheme of his theatre before the decorator is called for an estimate. The architect, in reality, is to use the decorator as part of his personnel. The decorator's function in the project is to follow the architect's wishes concerning colors and designs—but to advise him as to the good and bad and the reasons for the same. The architect (if a good theatre man) has undoubtedly surrounded himself with experienced men in all the specialties to make up his staff, including a talented decorator. The cooperation of these men will result, not only in a good artistic interior, but in a well-designed and constructed building.

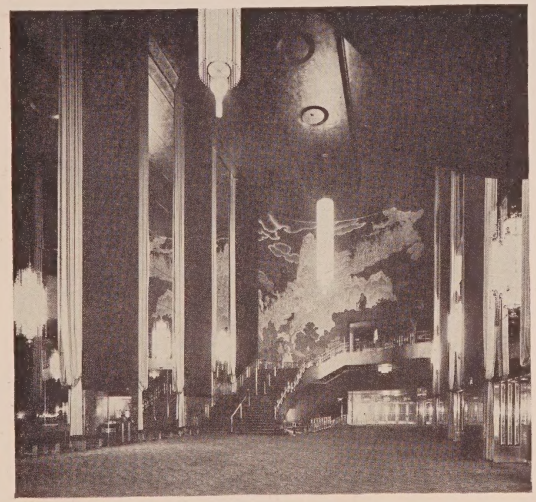
IN the old renovated theatre without the supervision of an architect, the decorator comes into his own. Here the owner should commission him as his sole representative.

The decorator should survey the house, make color studies of the different rooms; and, with the help of the lighting, air conditioning, and acoustical engineers, ascertain where their materials and fixtures are to be placed so they will become part of his decorative scheme.

I have found that decorating a theatre is always approached with a great deal of hesitation, because many problems arise, and the paramount one is concerned with operation. The decorator, to succeed in the theatre field, must be in complete sympathy with the problem of the theatre business.

The problems of old theatres can, in many instances, be rectified with paint. A low ceiling can be painted in a light color and the walls decorated with vertical bands; a high ceiling should be painted a dark color and the walls decorated with horizontal bands. A narrow theatre painted in a cool receding color will give the illusion of width. A wide theatre, painted in warm colors, will appear narrower.

The locale of a theatre should be considered when decorating. A theatre in a warm climate could be painted in cool colors with a predominance of green or blue; one in a cool climate may be painted in warm colors.



SIMPLE GRANDEUR permeates the Grand foyer of New York's famous Radio City Music Hall. The famous Ezra Winter mural in the background measures 30 x 60 ft.

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THE modern theatre of today, as I view it, should be as follows: The marquee should be simple in design and bold in its advertising effect. If too gaudy, it will lose its advertising value.

Poster frames should be so arranged as to appear to the best advantage for advertising, and to become part of the decorative and architectural scheme.

The vestibule should be kept simple, with cool colors and coming attraction posters on the walls. The posters should be the focal points. The use of carpets on the floor should be avoided. The lighting should be strong around the frames, with diffused lighting for the room itself.

The lobby should be kept dignified and somewhat formal in design and appointments.

The walls may be of wood, leather, linoleum, or rubber, and relieved with mirrors on the wall from the baseboard to the ceiling. If attraction signs are to be displayed, they should be built over the first entrance doors so that patrons can view what the coming attractions will be. The lighting should be less in intensity than the vestibule, but greater than the auditorium. The floor, if possible, should be carpeted so sound is deadened.

NOW for the auditorium. This has more or less been explained above, but I wish to emphasize that, in reality, the picture on the screen is being sold so by all means keep the walls and ceiling very simple. The color of the walls, whether of paint or any other material, the ceiling; carpets; draperies; and seat upholstery should be in harmony. Where the walls are covered with fabric, it is not wise to use a design which is out of scale with the architecture of the room and so bold that it becomes jumpy.

Aisle carpets are in better taste and more dignified if they are in plain colors and accented with a dark border. Design patterns in the aisles can be very confusing and disturbing while walking to your seat. The color of the carpet in many cases can be used as the basic color for the entire color scheme of the theatre.

The upholstered seats in most decorative themes should be analogous to the carpet.

Draperies should only be used on the stage, where they can be very decorative in color and design.

The rest rooms, especially the women's, should be intimate and decorative. Many modern wall coverings are now available, such as wall papers, flexwood, decorative linoleum, rubber, and other materials which could be used very effectively.

A point of interest, such as well-executed mural, may be introduced on the auditorium rear wall (back of the stand up rail) or in the lobby over the second set of doors.

I sincerely recommend not only trained and talented decorators for your theatre, but also specialists in every profession if you want an artistic house and a well built, comfortable theatre and building.

A theatre owner's thought in building a theatre is the box-office receipts. With this in mind, most important things for a theatre are good pictures, clear projection, the best sound obtainable, good acoustics, comfortable seats, well air conditioned rooms, and an artistic decorative scheme in keeping with good architecture.

Rest Rooms Appeal to the Ladies

The world's finest pictures in the world's finest theatre—plus patron pampering—get grosses. And don't forget the "plus."

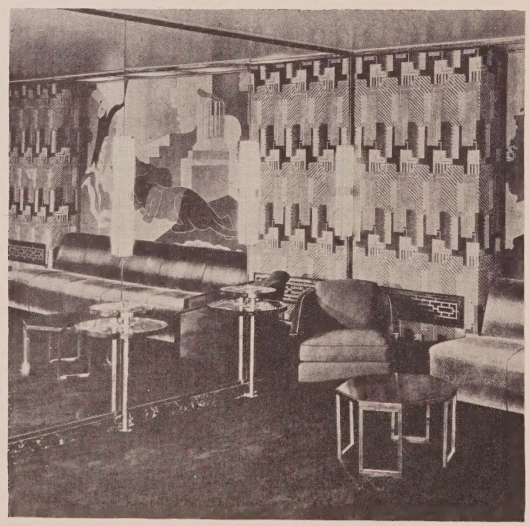
BY FRED A. CRUISE

WHEN Mrs. Patron walks past the box office of the world's largest theatre through the wide doors that lead from red and black marble lobbies, she is greeted by one of the most impressive sights in Rockefeller Center. For she is entering the grand foyer of the Radio City Music Hall, a giant hall 140 feet long, 45 feet wide, and 60 feet high, large enough to accommodate 2,000 persons. The wainscoting is of marble, the wall coverings of henna-colored brocatelle. Stately gold wall-mirrors extend upward to the ceiling past three mezzanine floors. Suspended from the ceiling are two 29-foot chandeliers, weighing two tons each, said to be the longest ever constructed. In the background, above the wide staircase curving to the first mezzanine, is the famous Ezra Winter mural, "The Author of Life," one of the countless art treasures decorating the playhouse.

THIS first glimpse of the dignified magnificence of the Radio City Music Hall sets the tone for Mrs. Patron's entire visit to the playhouse. For she knows that she will be seeing a performance in an atmosphere in which every effort has been made to insure her comfort and to surround her with the most luxurious accommodations that imaginative architects and designers could devise.

IT was in keeping with this thought that the lounging facilities and rest rooms of the Music Hall were planned. For luxury and comfort they are unmatched by any playhouse in the world. There are at the Music Hall four separate lounges for women patrons. (There are four men's smoking rooms as well.) The largest of these is on the sub-street level of the great theatre. Three others are conveniently located on each of the three mezzanines.

The women's lounge in the basement below the auditorium is off the city-block long grand lounge located directly beneath the foyer. Mrs. Patron can reach it by elevator or by either of two staircases located at ends of the foyer. She will step into a room decorated under the supervision of some of the nation's leading modern designers. The grand lounge itself is quiet and restful. Diamond-shaped pillars are completely covered with gun-metal mirrors. The dark carpet designed by Donald Deskey carries out the diamond design. The black walls are decorated by murals "The Phantasmagoria of the Theatre," painted by Louis Bouche. The luxurious furniture, also designed by Donald Deskey, is upholstered in red woolen material, patent-leather, heavy-pile fabrics and tweed. Black and chrome tables and numerous softly shaded lamps complete the room.



LADY PATRONS GASP at the luxury and elegance of this which is one of the many lounge rooms at their disposal in the Radio City Music Hall. Attached to the mirrors are make-up tables of heavy glass and tubular electric fixtures.

Fred A. Cruise, house manager of the world's largest theatre, has managed film houses from Florida to California in his long career in show business. Except for 18 months in France where he served during the World War with the 27th Division, he has been active in the theatre since, at 19, he went to work for the late Percy G. Williams in the box office of the old Bronx, New York City. In 1915 he came to Broadway as assistant manager of the Strand and, following his army service, he returned to join the Famous Players Lasky organization as manager of the old Rialto. Other theatres he has managed include the Rivoli, New York; the Paramount, Palm Beach, Fla.; the Criterion and Million Dollar, Los Angeles; Colonial, Boston. In 1933 he came to Rockefeller Center as manager of the Center and the same year he was transferred to the Music Hall.

OFF this grand lounge, past a cast-aluminum statue, Zorach's "Dancing Girl," is the main women's lounge. This consists of four separate rooms—a lounge, 34 feet by 21 feet in size; a powder room, 36 feet by 15 feet; a wash room, 15 feet by 15 feet; and a toilet room, 47 feet by 19 feet. The outer lounge has white parchment walls upon which is Witold Gordon's celebrated mural, "The History of Cosmetics." The furniture is sycamore and white lacquer, upholstered in white kid, high-pile beige and rough-textured rose fabrics and green damask. The mirrored powder room has individual make-up tables. The wash room is equipped with the finest fixtures available including the latest type of soap dispensers and electric hand-driers.

THE women's lounge on the first mezzanine has two rooms, a 16-sided structural glass powder room, 17 feet, 10 inches in diameter, and a toilet room, 15 feet by 20 feet. The powder room has fittings of yellow structural glass, mirrored make-up tables, and furniture of white lacquer upholstered in white kid. The second mezzanine women's lounge has a powder room, 18 feet by 21 feet in size with black patent leather furniture, mirrored make-up tables, and painted wall decorations by the celebrated Japanese artist, Yasuo Kuniyoshi. The toilet room is 21 feet by 14 feet.

ON the third mezzanine, the women's lounge room has two walls completely mirrored with make-up tables of heavy glass, and vertical electric light spandrels of frosted glass. The walls are of tan and brown plaid tapestry and one is decorated by a mural by Henry Billings. The room is 18 feet by 21 feet in size, while adjoining it is a toilet room, 22 feet by 15 feet in size.

IN all of the lounges, cleanliness is the watchword. Two attendants in the main women's lounge, one in each of the three mezzanine lounges, see that the tile fixtures are kept spotlessly clean and cabinets constantly supplied—that every want of a woman patron is instantly taken care of. In addition to the luxury lounges, another service that has a particular appeal to women patrons is the efficiently operated Music Hall first aid room located in the grand lounge. Here a registered nurse is constantly in attendence, ready to take care of any minor emergencies. Fully equipped, the first aid room is a veritable "pocket" hospital ready at a moment's notice to serve any patron. Still another service that especially appeals to women is the Music Hall's free checking service in the grand lounge. Here women shoppers can shed their parcels, travelers their luggage. A strictly enforced no-tipping rule which prevails throughout the theatre makes this service even more attractive.

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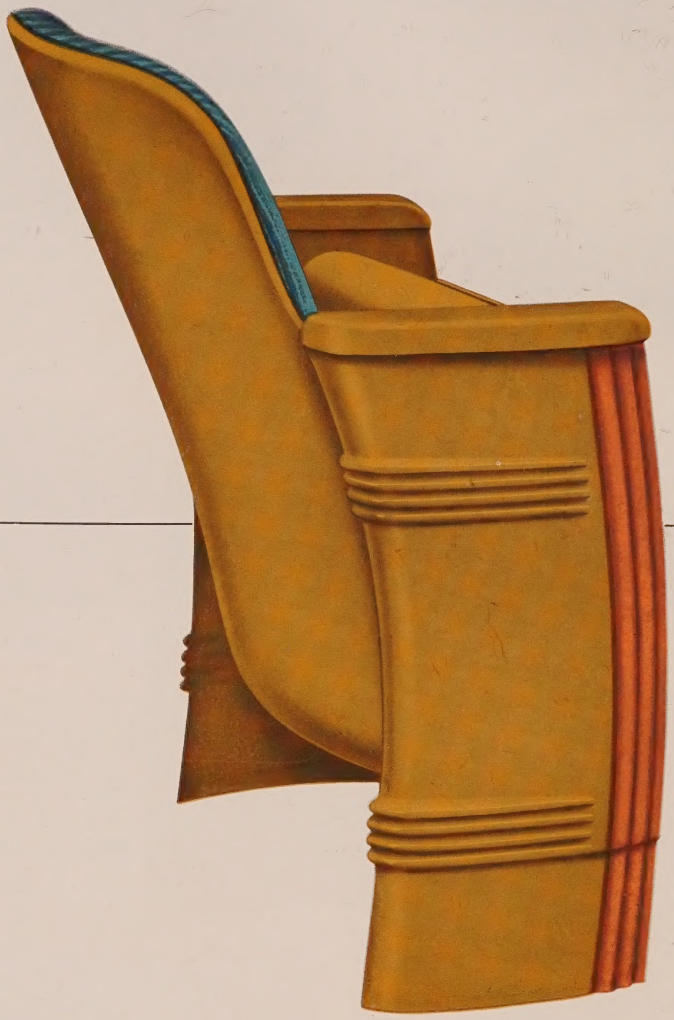

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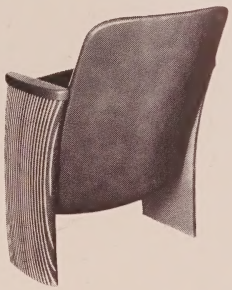
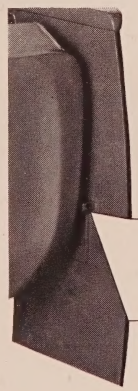


extend below seat level fully protecting the seat when in raised position. Rolled edges protect upholstering on top and sides of backs.



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MORE PASSING ROOM

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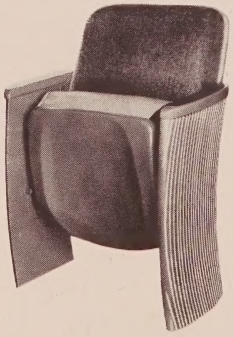

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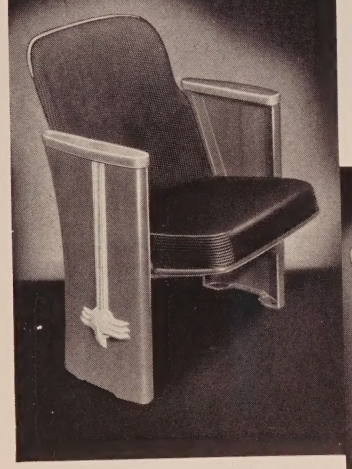

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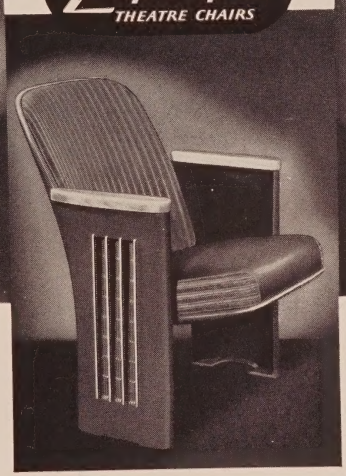

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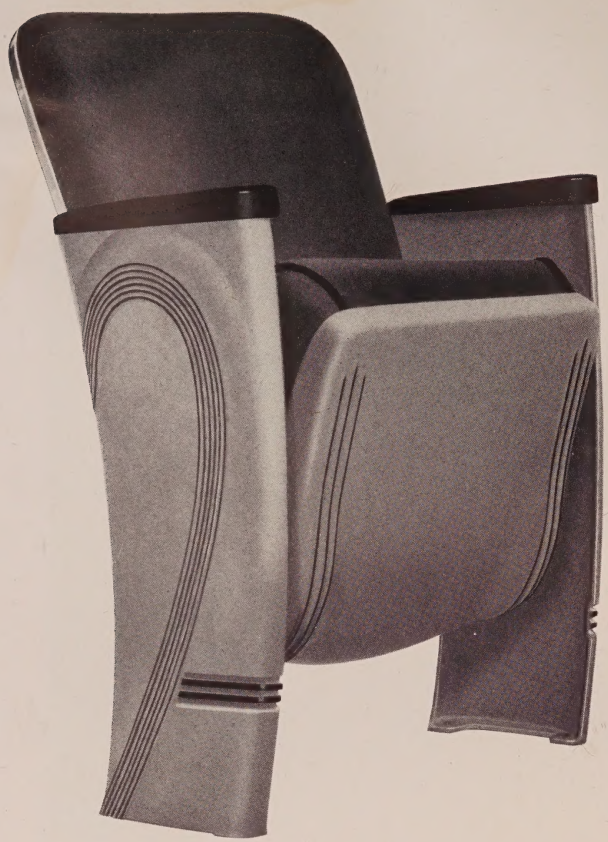

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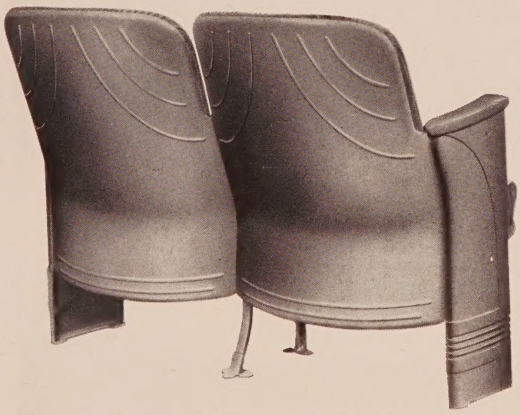

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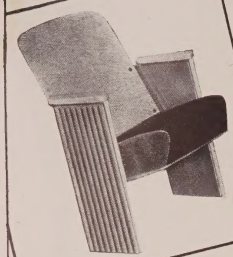

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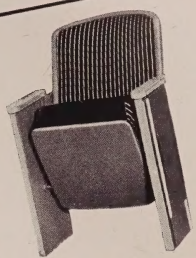
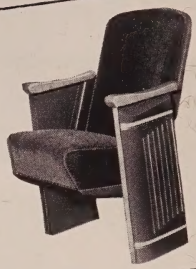
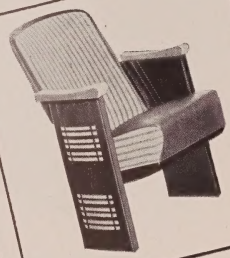


No. 160
INSERTED PANEL BACK, SPRING EDGE CUSHION— CHALLENGER CHAIR.



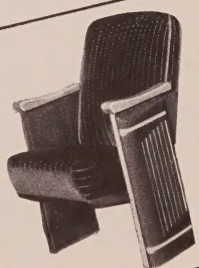
No. 201
PADDED INSERTED PANEL BACK, SPRING EDGE CUSHION CHAIR.



No. 401
INSERTED PANEL BACK, SPRING EDGE CUSHION CHAIR.

No. 350
PADDED, WELTED BACK CHAIR — SHOWING KICK PLATE.

No. 301
FULL PADDED BACK, SPRING EDGE CUSHION CHAIR.



No. 501
MARSHALL SPRING BACK, SPRING EDGE CUSHION CHAIR.

No. 650
PADDED, WELTED POSTURE BACK — SPRING EDGE CUSHION CHAIR.

CUSTOM BUILT—ALL RUBBER BACK, CUSHION, AND ARM RESTS.

INTERNATIONAL SPREADING COMFORT TO MILLIONS SEAT CORPORATION

INTERNATIONAL SEAT CORP.
UNION CITY, INDIANA

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Reasons Why KROEHLER *Push-Back Seats*

REVOLUTIONIZE THEATER SEATING

Now at Sensationally Low Prices!

The Kroehler Push-Back Seat is the only theater seat that permits patrons to enjoy a complete show without interruptions.

With this patented and exclusive seat, patrons remain seated in luxurious comfort throughout the show. There is no blocked vision due to whole rows ahead standing to let people enter or leave their rows.

Operation is simple. A slight thrust of the feet retracts the seat 5½ inches without lessening the row space behind it. Ample passing space is thus provided for those entering or leaving rows.

Here truly is the first and only theater seat designed to meet modern movie theater conditions. Be sure to investigate this revolutionary seat before making any seating commitments.

Built by World's Largest Furniture Manufacturer

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Standard Theater Supply Corp. 78 Broadway, Boston, Mass.

No Other Theater Seat Has All These Sensational Advantages

★

UNINTERRUPTED COMFORT

No standing to let others pass. Patrons remain seated throughout show.

No stepped-on toes.

No obstructed vision—no more standing by entire rows to let someone enter or leave rows.

The same lounge-chair comfort that world's largest furniture manufacturer builds into living room furniture.

★

INCREASED BOX OFFICE

Greater comfort for patrons is surest way to build theater preference.

Faster turnover on peak days because there is no embarrassment in entering or leaving seats.

So radically different from old-style seats that it puts showmanship into theater and presents unusual publicity opportunity.

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MINIMUM MAINTENANCE

Easy to install at lowest cost. Just tighten four bolts to make them solid.

Absolute safety with all moving parts covered. No accidents.

Simple and foolproof with minimum number of moving parts.

Easy to clean with plenty of clearance for broom or vacuum cleaner.

Removable backs and cushions simplify cleaning and repair of fabrics.

Ease of replacement. Transposition of center and side seats can be made without unbolting or unscrewing a single unit.

★

AMAZING DURABILITY

Pretested for endurance to points far beyond those they will receive in normal theater use.

Built and backed by the vast resources of Kroehler—world's largest furniture manufacturer.

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RECENT INSTALLATIONS

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This can't happen in theaters that have *KROEHLER PUSH-BACK SEATS*

KROEHLER MFG. CO.

Carpet Maintenance and Care

The people who make and know most about wool carpets, tell how to get the most service from them.

BY THE INSTITUTE OF CARPET MANUFACTURERS OF AMERICA

THE SELECTION OF THE FLOOR COVERING IN RELATION TO ITS USE

Any floor covering is varied in its quality characteristics and purposes, according to the different uses to which it may be put. The wise purchaser becomes acquainted with these special characteristics so that he or she may select the type of construction, design and coloring which most closely meet their particular demands. The careful consideration of utilitarian as well as the decorative effects does not limit the possibilities of the purchasers. On the contrary, it supplements and assures the permanence of those effects which the purchaser desires.

PLAIN OR SOLID COLOR RUGS AND CARPETS—Pile floor coverings, like all pile fabrics, are subject to shading effects, particularly in the early periods of their use. This is especially noticeable where traffic is very heavy over some parts of the carpeting and light over other parts. The plain rug or carpet is beautifully smooth and evenly colored when new, but wool, while elastic, is not infinitely so, and this smoothness cannot be expected to be retained under constant and unequal wear.

LIGHT COLORS—Delicate tints and light shades are sometimes used in decorating and for certain pleasing effects. However, if these colorings are expected to be permanent, they should be used where traffic is relatively limited and where foreign materials will not be spilled on the floor, unless the consumer is prepared to have the carpet frequently cleaned or replaced.

FADING—Wool floor coverings have kept pace with the tremendous progress of modern chemical science in the use of wool dye-stuffs, having a permanence unheard of in the early manufacture of rugs and carpets. Consequently it is no longer necessary to protect wool floor coverings against the normal exposure to light such as is experienced in the average home.

STAINS AND SPOTS—Spillage is a frequent cause of staining and spotting. The progress in the science of dyeing has brought about, in floor coverings, an improved resistance to color changes caused by foreign materials. However, the effect of certain types of spillage is still considerable, and in areas where spillage is likely to be great, the use of green, blue and rose taupe shades need particular protection.

SOIL—Carpets and rugs are exposed to the soiling effect of traffic and dust-laden air. Such soiling has varying degrees, and if soiling is expected to be relatively excessive, light colors should be avoided in floor coverings. Excessive soil will tend to change the tone of certain colors, and in using delicate tints one should consider this effect.

Excessive dirt in the pile of floor coverings will naturally decrease the wearing qualities of the fabric.

THE INSTALLATION OR LAYING OF THE CARPET

CUSHION—Where carpets and rugs are subjected to unusually severe wear conditions, such as when laid on concrete and marble floors or on stairs, the use of rug cushions is especially indicated.

In all cases the condition of the floor is important. Rough and uneven floors and those with spaces between boards or with raised parts, such as door sills or sliding door trolleys are a frequent cause of severe localized wear.

It is recommended, that especially with fabrics of light weight and open construction, rug cushions which have a raised design on one side, be laid with the design side down and the smooth side up.

SEWING OR SEAMING—Where the number of breadths to be matched and sewn together are many, it is advisable to lay the carpet on the floor before seaming or cutting, matching the breadths both for color and figures. If the rolls do not exactly match for figure they can easily be shrunk to a key piece by tacking the carpet to the floor with the pile face down, and then sprinkling hot water on the back in order to remove any puckers or ripples that appear. The carpet must be thoroughly dry before final laying, otherwise mildew will result, causing the various fibers to disintegrate. Care should be taken that the pile in all breadths runs in the same direction, otherwise a dark and light shading may result.

STRETCHING—When carpets or rugs are attached to the floor, the tension used in stretching the fabric is most important. Carpets or rugs tend to increase in their dimensions as the humidity of the atmosphere surrounding them increases. If a carpet is tacked down without tension on a dry day, the humidity of damp weather may cause it to expand, and puckers may result. Puckers will be avoided if the carpet is laid under tension when attaching it to the floor in dry weather.

ALLOWANCE FOR REVERSIBILITY—The practice of turning the carpet or rug around from time to time and thus distributing or equalizing the travel over the surface is a wise precaution against shading and localized wear. When floor coverings are installed in corridors or irregular shaped lobbies, provision can be made for reversing if the carpet is divided into sections with this purpose in mind.

STAIR CARPET—The choice of carpet for stairs is a particular instance of the special demands for wear which individual installations may offer. This type of service demands floor covering of high wear durability. Thus carpets with dense, tight pile surfaces should be used and the stairs should be heavily padded, particularly over the nosing. The carpet should be cut so that there is an extra allowance at one end. It can then be shifted from time to time so that new areas will come over the nose of the stairs, thus distributing the wear.

MAINTENANCE

WHILE THE CARPET OR RUG IS NEW—With the improvements in carpet construction and in the design of vacuum cleaners, it is no longer necessary to avoid the use of a vacuum cleaner during the first few months a rug is laid. Of course the carpet will fluff to a certain extent during this period. This fluffing is caused by the working out of the short ends left in the yarn as the pile is cut and will discontinue as soon as these ends have been removed. This fluffing does not injure the life or quality of the fabric.

From time to time during the early life of a new carpet or rug, occasional tufts may be seen to protrude above the surface. These tufts should be clipped on a level with the surface with a sharp pair of shears and this causes no injury to the surface of the fabric. One should never attempt to pull out these tufts.

GENERAL MAINTENANCE—The general maintenance of wool floor coverings may be divided into three phases; the daily care, the weekly care, and the seasonal cleaning which varies in frequency with the exposure and locality, color and design.

DAILY CARE—A vacuum cleaner may be used every day, and especially where the floor is frequently traveled or near an entrance from the street. Superficial dirt may be removed by a carpet sweeper or by a soft-bristled broom, although the former is preferred. When the rug has been cleaned, the nap should be gently brushed so that the pile is all left lying in the same direction.

WEEKLY CLEANING—A vacuum cleaner should be used on all surfaces once a week; twice a week on heavily traveled

areas. The use of the vacuum cleaner in untraveled areas removes dust deposited from the air and assists in the prevention of moth damage.

Small mats should never be shaken by gripping them at one end and snapping the other. This method is frequently the cause of broken threads in the back which results in the pile coming out under use. It is also frequently the cause for breaking of the fringe or serging.

PERIODIC CARE—The application of a hot iron on a damp cloth to small areas crushed by furniture or the shuffling of feet will allow the brushing of the pile to a more normal position.

If a tape is used in the binding and should become loose, instructions for its repair should be obtained from the manufacturer.

Labels on rugs or carpet should be allowed to remain for identification purposes.

The curling of the corners of rugs can be remedied by the application of a hot iron on a damp cloth to both face and back of the carpeting at the corners.

If it is desired to brighten the surface of the carpet and remove soluble grease and fats, it is not considered advisable to use soap solutions or water solutions of various detergents, such as ammonia, which should be avoided because of the harmful effects of residual fats, possible slow drying, and color changes. Organic solvents which are quick evaporating cleaning fluids may be used without damage to the fiber or colors, but care should be taken that the room is well ventilated. A fresh mixture of naptha and carbon tetrachloride in equal parts, or cleaning solutions which conform to the Commercial Standard C.S. 3-28 of the United States Department of Commerce, Bureau of Standards, reduces the hazard of inflammability.

This type of care should be adequate for most fabrics and most exposures. For certain fabrics, such as the luster type rug, which depend for their effect on the maintenance of this luster by complete cleanliness of the fiber all the way to the base, or for light colored or white rugs, additional cleaning may be necessary. In such cases, the cleaning should be entrusted to the hands of an expert who is provided with adequate and modern equipment.

Under no consideration should an attempt be made to shampoo a rug or carpet while on the floor. There is no shampoo method or device which, while the carpet is on the floor, adequately cleans the fabric to the base of the pile or effectively removes the soap and detergent material. This residual soap and detergent material causes rapid resoiling, development of crushed appearance, and may cause the development of rancid odor or a gradual color change in the dyestuff.

GENERAL COMMENTS

The maintenance of your floor covering in the cleanest possible condition is most important both to insure its maximum durability and to guarantee that you are obtaining a continuation of the decorative effect desired when the carpeting was selected. It is well known that a pile fabric which is allowed to retain dirt will not wear as well as one kept free from dirt and dust.

Soil is frequently confused with wear, fading and pile crushing. If your floor covering appears to be worn or faded, it should be carefully examined to determine whether or not the real trouble is caused by an accumulation of soil. The previous use of floor shampoo processes very frequently causes this confusion as repeatedly floor shampooed carpets nearly always look worn and faded.

MOTH PROTECTION—With normal exposure, care, as described above, is sufficient moth protection. Usually where infestation of the carpet exists, the moths will also be found in upholstered theatre chairs, lounge furniture and other dark undisturbed places. Where moths are found to be actually present, they may be completely removed by thorough professional cleaning, but care should be taken that at the same time the complete auditorium is freed of moths by proper treatment of other moth harboring materials present.

If certain rooms are to be closed up, the floor covering can best be stored after complete cleaning and airing, by packing in brown paper. Moth repelling materials such as paradichlorbenzene, may be sprinkled over the surface and will be effective as a discouraging agent only while the odor remains.

The members of the Institute of Carpet Manufacturers of America, Inc., are:—The Beattie Manufacturing Company, Bigelow-Sanford Carpet Company, Inc., Charles P. Cochrane Company; Marshall Field and Company, the Firth Carpet Company, Hardwick and Magee Company, Hightstown Rug Company, Archibald Holmes and Son, A. and M. Karagheusian, Inc., Lea Fabrics, Inc., Thomas Leedom Carpet Company, the Magee Carpet Company, C. H. Masland and Sons, Inc., Philadelphia Carpet Company, Roxbury Carpet Company, Alexander Smith and Sons. At the time of its founding in 1927, there were many trade associations, manufacturing and otherwise, throughout the country, all of them being co-operative efforts to promote progress and development in the carpet manufacturing industry. The Institute is authorized under its charter to conduct a very wide variety of activities such as trade research in manufacturing and marketing, the collection and dissemination of information to enable each manufacturer to have truthful sources of information regarding markets, raw materials, improving methods of production and distribution, etc. As an organization, it has its relations with the government, with the public, and with the trade generally, not only in its protection but in its responsibility to such interests.

LUSTER TYPE RUGS—Luster type rugs should be periodically cleaned by a thorough wet shampoo process followed by a thorough rinsing. As most of these constructions are relatively dense, the rinsing process will require a considerable period of contact with large quantities of soft water. Where the original luster was obtained by the chemical treatment of the fiber without the use of oils or waxes, no additional treatment beyond a thorough soap and water cleaning is required. If oils or waxes were used in the original lustering, the cleaner should get in touch with the manufacturer for special instructions for restoration of the luster. In some cases the manufacturer provides facilities for this restoration.

WEAR AND TEAR on a theatre carpet is probably without equal in any other type of carpeting. This view of the "break" at the Radio City Music Hall where as many as 186,000 persons have attended in a single week, tracking in dust, slush, and other inclemencies of weather best proves that good carpets can take it.

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IS AMERICA'S
NO. 1 THEATRE CARPET

"NEARLY RIGHT WON'T DO" is a watchword that reaches down into every phase of production in the Alexander Smith mills, where the famous Crestwood Carpet is woven.

QUALITY CONTROL—the intangible ingredients of laboratory precision and manufacturing skill—are as much a part of Crestwood value as the quality of the raw materials which form the finished fabric.

96 YEARS OF MANUFACTURING EXPERIENCE govern every phase of production in making Crestwood one of the longest-wearing carpets you can buy.

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Crestwood No. 2305-M

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Available also in Fluorescent

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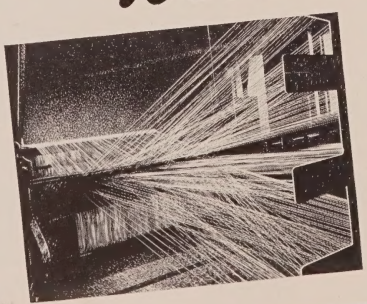

Alexander Smith pioneered the development of Fluorescent Theatre Carpet. If you haven't seen the magic it creates in house appeal, we'll gladly arrange a demonstration. Brochure on request.

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A few of the newest Crestwood designs are shown here. In addition to a wide assortment of staple patterns and colors we are equipped to weave Crestwood to order in any design or color specification. Our contractors in your city will be happy to work closely with you.

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GUARANTEED BY GOOD HOUSEKEEPING AS ADVERTISED THEREIN

ALL WOOL PILE

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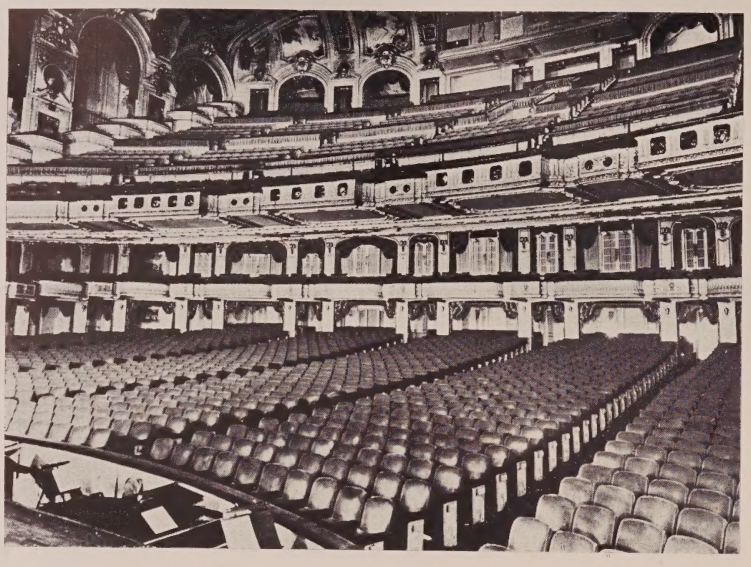
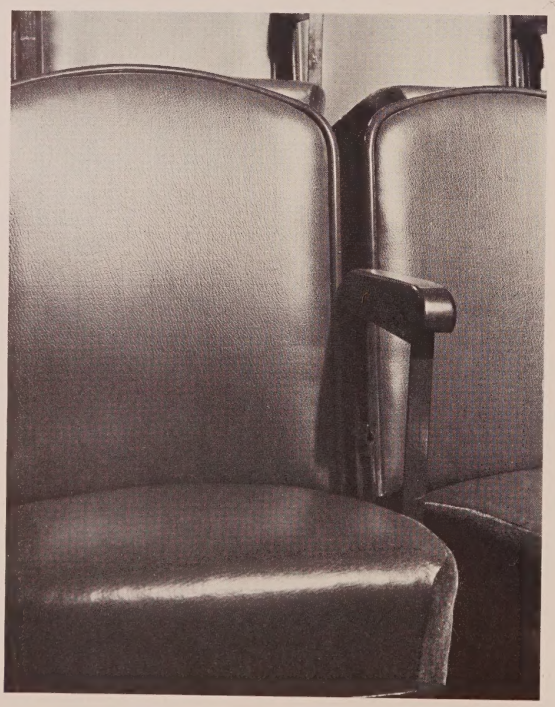


● *Shown is the CHICAGO THEATRE upholstered with . . .*

CHASE VELMO MOHAIR VELVET

Velmo Upholstery lends comfort, beauty and elegance to any deluxe theatre interior. Available from leading theatre chair manufacturers, Velmo is an extremely durable, long-lived, hard to soil, easy to maintain upholstery . . . modern and luxurious in every sense of the words. Velmo's soft surface absorbs sound, improving acoustics materially.

Your patrons will appreciate a Velmo-upholstered chair . . . this upholstery holds the chair occupant comfortably erect, preventing that "second-feature slump." Velmo will make friends for any theatre manager.



● **REDO-UPHOLSTERED** *seats in MADISON SQUARE GARDEN, New York City.*

Chase Redo Upholstery is a durable coated fabric (artificial leather) that closely simulates genuine leather in appearance as well as wearing quality. Redo, as a matter of fact, is manufactured from ground genuine leather and first-grade rubber.

Redo is designed to meet the rigid demands of soft cushion or deep-spring constructed chairs. Redo withstands a maximum of flexing and folding without cracking or peeling. To avoid shabby-looking chairs, specify Redo Upholstery.

Redo is easily maintained with warm water and the suds of a neutral or non-alkaline soap, such as Ivory or Lux.

Specify CHASE Fabrics

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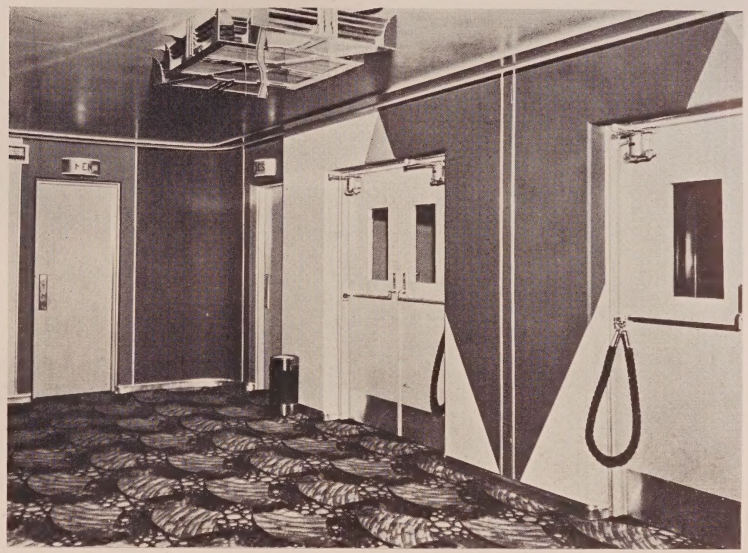
Theatres...by CHASE



CHASE LEATHERWOVE •

was used for wall-covering in this theatre foyer.

Chase Leatherwove is a coated fabric for chair upholstery or wall-covering. Leatherwove is economical and truly leather-like in grained effects and colors. Leatherwove is ideal, when used as upholstery, for slip-type or padded seats. It is not recommended for soft cushion or deep-spring chairs. (For the latter type, specify Redo.)

Special qualities of Leatherwove are available to the theatre architect for wall-covering or general decorative use.

CHASE SEAMLOC CARPET *has been used here in the UPTOWN THEATRE, Minneapolis, Minn.*

Seamloc is a broadloom with unusual advantages. With Seamloc, original designs, motifs or directional lines can be easily and economically inlaid. Worn or burned spots can be cut from Seamloc and replaced with new sections of carpet. And Seamloc can be very easily re-designed to fit into re-designed or new areas.

Seamloc's high quality plus its unique advantages make this carpet an ideal floor covering for large and small theatres. Available from leading carpet distributors, Seamloc comes in a wide range of rich, modern colors, plain or textured designs.

for Guaranteed Quality!

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NEW YORK CITY, N. Y.

L. C. CHASE & CO.

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Grand Foyer, Radio City Music Hall Wilton Carpeting by the House of Gulistan, Specially Designed.

Carpeting BY THE HOUSE OF

GULISTAN

MANUFACTURERS OF CARPETS SUPPLIED TO LEADING THEATRES EVERYWHERE

A. & M. Karagheusian, Inc. (theatre contract division) *295 Fifth Ave., New York City*

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After 45 million people had passed over the carpeting in the Grand Foyer of the Radio City Music Hall, the management replaced it with the same design, the same quality, the same yardage, from the same maker . . . The House of Gulistan! Every theatre manager knows *how much* this proves in terms of *value delivered* from the standpoints of Distinction, Durability and Price!

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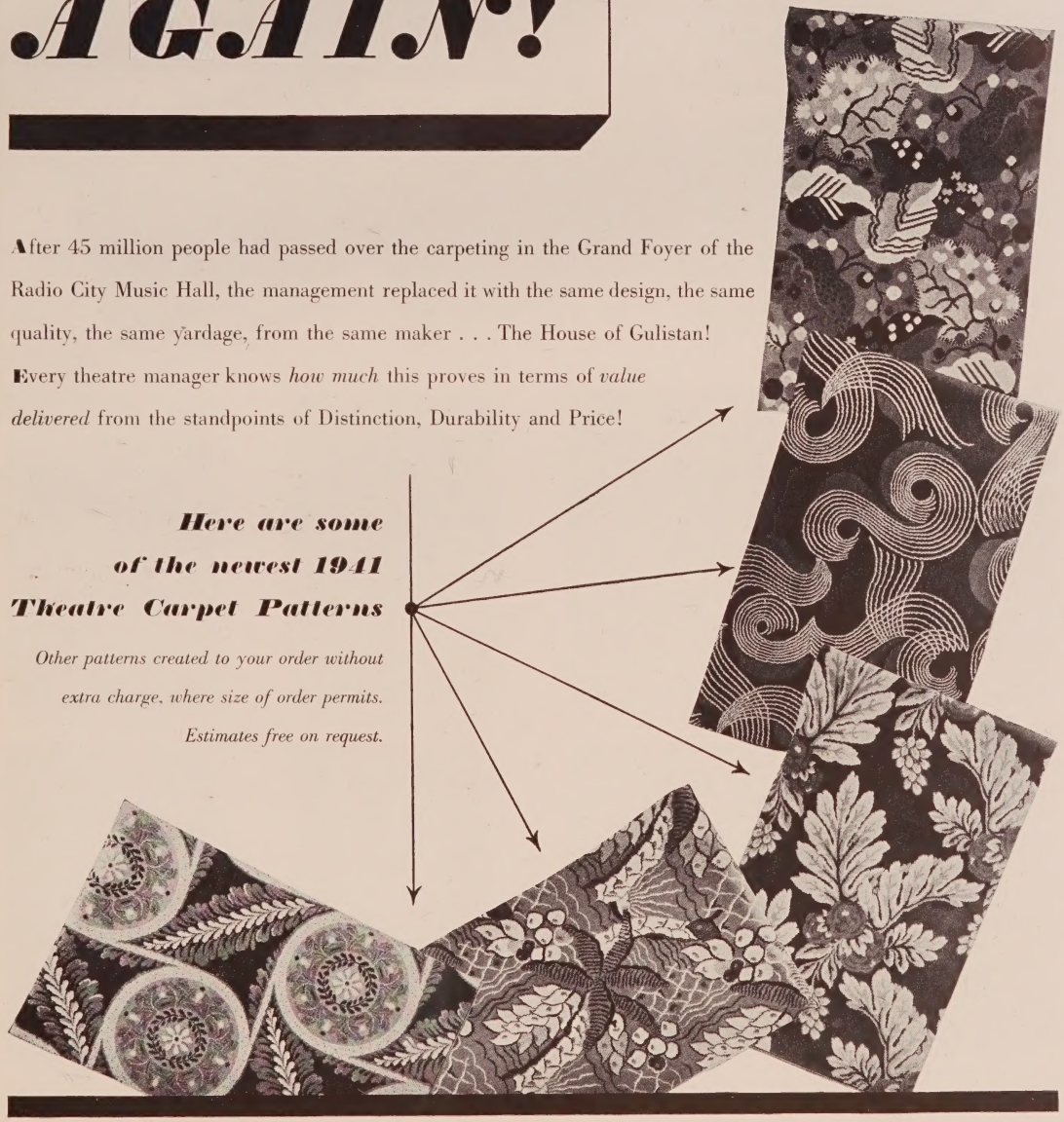
Other patterns created to your order without extra charge, where size of order permits. Estimates free on request.



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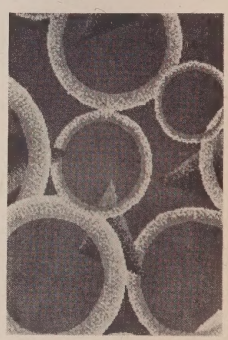

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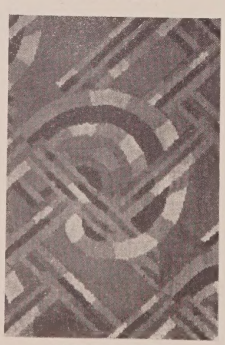

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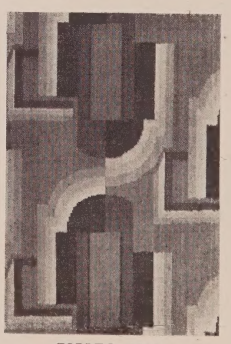

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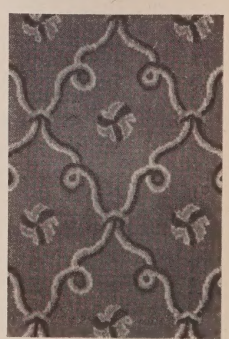

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★ GRAND THEATRE, SAN FRANCISCO, CALIF.
★ RIVER OAKS THEATRE, HOUSTON, TEXAS
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BROADWAY 61105K

BROADWAY 61103K

W1076 84311J

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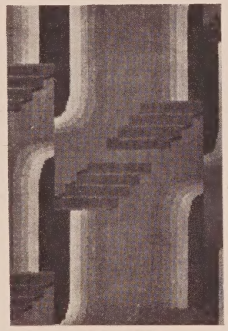

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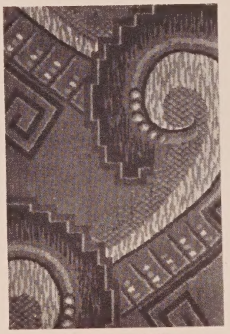

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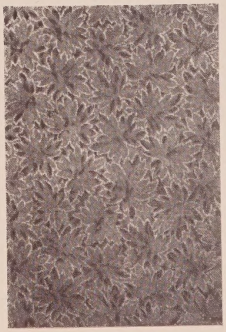

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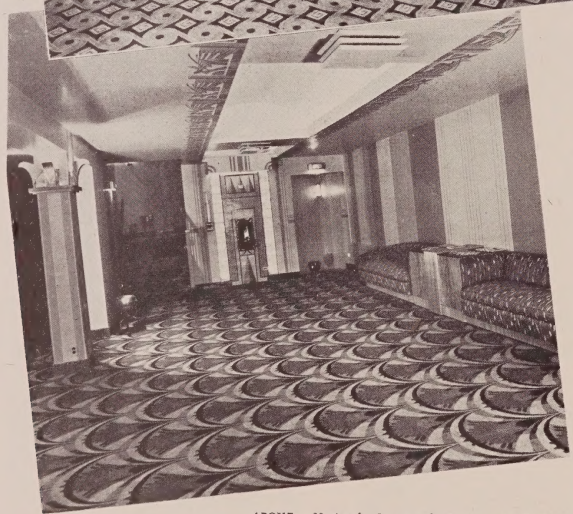

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ABOVE:—National Crestwood Carpets heighten the rich dignity and luxurious effect of the new Tyson Theatre in Philadelphia, Pa.

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Plan Your Acoustics

when you plan your structure and you will be able to correct all flaws on the drawing board.

BY K. C. MORRICAL

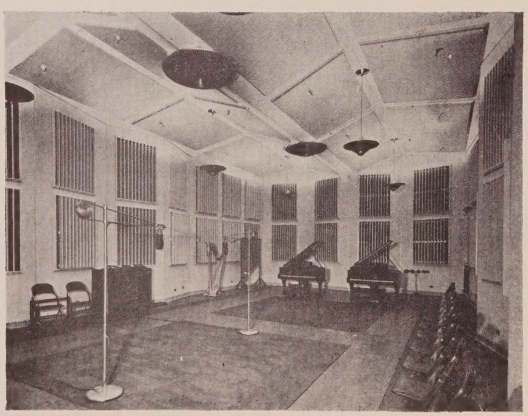
"PLAN your acoustics when you plan your structure" should be a slogan which hangs above the design board of every architect. Some will immediately say, "I don't design theatres or auditoriums; my problems are not at all concerned with acoustics." To refute this viewpoint, it is only necessary to point out a few of the many instances in which the functioning of buildings have been improved by even a little attention to the acoustic aspect. For example, acoustic treatment of a zoo reduces the noise level arising from the spectators and results in less restlessness among the animals. A model test basin in which the operation of scale models of ships is measured is another illustration of acoustic treatment in a non-auditorium type of building. However, the purpose of this article is not to point out the desirability of acoustic treatment in all types of buildings but to show that good acoustics must have their base in the fundamental plan of the structure. In this idea it is necessary to differentiate between "good acoustic condition" and "acoustic treatment," for the latter is only one aspect of the former.

AT one time, and not so long ago at that, acoustics was the last thing to which consideration was given in the design of a building. This situation was no doubt an outgrowth of the development of the combined theatrical arts and building arts. In order to illustrate, let us look at a theatre of not too long ago and then compare it to a modern present day theatre. The points listed below have been selected as characterizing for our purposes a theatre of 50 years ago:

1. Was used for original music and speech
2. Was constructed of wood, or a combination of wood and other materials
3. Was comprised almost entirely of boxes along the two side walls and rear wall from floor to ceiling
4. Was usually ornate and heavily decorated in the interior

These points seem to have little connection with the subject at hand, but now let us look at the corresponding points for a modern theatre and see what effect the transition to them has had on the acoustic performance of the theatre.

1. Is used almost entirely for reproduced speech and music, even original action on the stage being supplemented by a sound re-enforcement system in many instances. The significance of this change is that whereas in the early days the theatre had to handle only non-directional sounds that often needed re-enforcement by stage reflectors, etc., today the theatre must be suited to handle sound that is entirely directional in character (the loudspeaker) and in addition can be as loud as it is desired to make it. The requirements for theatres designed to be used with original sound and with reproduced sound are in many respects quite different and consequently many factors now have to be considered where before they were neglected. Perhaps the most familiar of these is the rear wall, which now intercepts an appreciable part of the sound directed to the audience and without proper shaping and treatment will direct it to the audience in the form of echo.
2. Is constructed of masonry or other hard materials. The significance of this change is the introduction of hard reflective interior surfaces in place of wood panelling and other materials which have some sound absorbing ability. This will be discussed further in connection with Item Four below.
3. Seating now arranged on main floor and sometimes a single balcony. Where before the side walls and especially the rear wall were broken up by boxes, which acted to disperse the reflected sound, today these same walls are smooth and hard and act as good reflectors.
4. Theatres today usually hew to modern stream lines with simplicity the motif. Any decoration is usually painted directly on to the walls; even in the "gingerbread" house the decorations are usually carved or of cast plaster. The sound absorption contributed by those drapes and hangings and box furnishings of the older decorative schemes does not appear in present decorative schemes and their lack is immediately apparent.



LIVE SOUND without echo, distortion, or flatness results from the various planes indicated in the above view of a recently designed radio broadcasting room.

THIS analysis can be summarized briefly by saying that the function of the present day theatre is quite different and that it does not possess the fortuitous shape and natural absorption that characterized the older theatre. To put it in a little different light, the architect had only to design his theatre along accepted lines, treat it in a conventional manner and he had something satisfactory for the purpose at hand.

WITH the advent of fireproof construction there arose acoustical difficulties which required solution. The solution usually was the installation of various kinds of sound absorbing materials for the purpose of correcting the acoustics. At first this sounds quite logical, but on a little thought that word "correcting" begins to take on a more significant meaning. It is the philosophy which governed what will perhaps be known as "the era of acoustical correction," during which the procedure was to design a building, erect it in accordance with that design, and then correct any bad acoustic conditions that happened to show up. Happily, we are now at the dawn of a new era, which we can proudly call "the era of acoustical design," after passing through a transition stage in which the above acoustic correction was incorporated in the original design. In the era of acoustical design, which we are just entering the final acoustic condition is the ultimate goal, and all elements of design are bent towards realizing that goal. Let us look at what this means.

ALMOST everybody nowadays is familiar with the term, "reverberation time," which is the length of time required for the sound in the room to subside to one one-millionth of its original intensity or, in other words, to be reduced by 60 decibels. And we have formulas by which the reverberation time can be computed when the volume, total area and total absorption of the room are known. What is often forgotten is that the validity of the formulas depends upon the existence of an absolutely random and diffuse distribution of the sound in the room, and the greater the departure from this diffuse condition, the less the accuracy of the formulas. One has only to look through the literature of the past decade to be impressed with how seldom is the condition of diffuse sound.

In the testing of sound absorbing materials in "reverberation chambers," which are special very live test rooms, the highest possible accuracy must be obtained and as a consequence many elaborate schemes have been devised for obtaining a diffuse distribution of sound. Such artifices as swinging and rotating loudspeakers and measuring microphones, rotating mixing baffles, warble notes, and even columns have all been used in the attempt, and it is still not perfect.

IN the theatre, we have almost the opposite of this condition, a beam of sound from the stage loudspeaker direct toward the seating areas. The question arises—can we then speak of reverberation?—and the answer is that we can if we use it as a guide and not as an absolute criterion of the acoustic acceptability of the theatre. The figure indicating the reverberation time must be used as a guide for determining approximately how many units of sound absorption are required within the theatre, but also to be considered are: (1)—the placement of the sound absorbing materials and, (2)—the general and detail shape of the structure itself.

TO illustrate the importance of placement of material we can examine the effect of covering the entire rear wall with sound absorbing material contrasted to the effect of placing the same amount of material on the front wall adjacent to the proscenium. In the first case, the material reduces echo off the back wall, improves the intelligibility, and aids in the reduction of reverberation. In the second case the sound is practically unaffected by the material, which acts only in a secondary manner to reduce the reverberation time.

TO illustrate the importance of shape, let us assume an idealistic case in which the following conditions are satisfied:

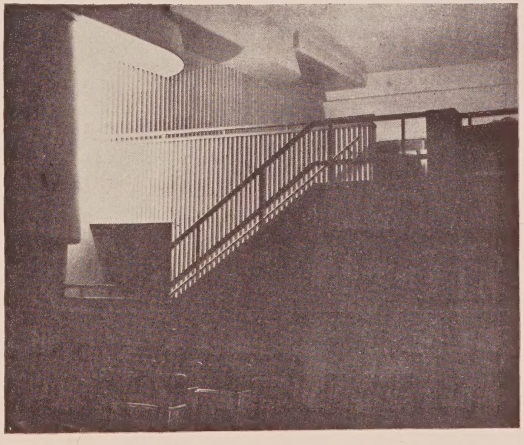
1. The side walls, the ceiling, and the rear wall are all so shaped as to direct the sound from the loudspeakers to the audience area without objectional interference or phase effects.
2. All the seats are occupied, or are heavily upholstered, providing nearly perfect sound absorption in regard to the floor.
3. No other sound absorbing materials are present.

In such a theatre, the sound would reach the audience direct from the loudspeakers, and would also flow to the audience from the side and rear walls and from the ceiling in such a manner that the reflected sound would enhance the direct sound. Once received by the audience, it would be absorbed there and not reflected back into the theatre. The auditorium would be pleasantly live and not unnaturally dead as is the case out of doors or in an overtreated theatre. There would be perfect hearing—with no acoustic materials added.

SUCH an idealistic design is, of course, not practical. In the first place, it would be expensive to construct a theatre with the required shape, supposing the required shape to have been determined. Secondly, no precaution is taken against sounds extraneous to the picture, such as audience noise, etc., which are now damped out by the materials as usually installed. However, this idealistic design can be held as a sort of guide, or goal, and as each new design comes to his board, the architect can ask—how, with materials and methods made available since my last design, can I make this theatre more nearly approach a theatre which perfectly co-ordinates all requirements? The design problem is thus to work between the unimaginative structures of the past and the idealistic structures of the future, keeping always as far in the direction of the ideal as current practices and facilities will permit, but always in that direction. Ideas that are not practical now, may perhaps be readily translated into practical design in the near future.

THE problem can best be approached from two directions, which we can call the macroscopic and microscopic. In the former, we stand off and consider our problem as a whole, the general shape, the type of house, and all broad aspects of design. In the latter, we examine all factors minutely, asking what is the best shape of this or that particular surface, where should sound absorbing materials be placed, etc.? Both are important, for upon the proper handling of small details as well as upon the development of the broader aspects does the final acoustical excellence depend. It is alright to say that high ceilings should be avoided, that the ideal ratio of length to width is 1.6 to 1, or that a fan-shaped house is desirable, but we must look further and say that shaping the rear wall correctly will avoid echo, that applying acoustic material here will eliminate flutter, etc. Consider so small and often neglected a detail as the balcony fascia; only 30 inches high and yet if it is situated in the proper relation to the loudspeakers and the audience and in addition is slightly concave, it may produce a high frequency echo, even if it is treated with a two inch rock wool blanket. The remedy is almost as simple as the trouble: incline the fascia forward by a slight amount, usually 15 degrees, and the trouble disappears. This is, of course, but one example of correct design; there are many other instances of features that must be properly combined and co-ordinated to result in an overall product that will provide the best possible listening environment for critical audiences. This co-ordination can only be accomplished at the inception of the design, while the design is yet plastic and while there is still time to subjugate the less important factors to the more important acoustical features. It can be done then and only then, for with the structure once started, the problem of acoustic design retrogresses to acoustic correction. In other words—plan your acoustics when you plan your structure.

Keron Caldwell Morrical was graduated from the College of Engineering of the University of Illinois, receiving the B.S. degree, in 1929. From 1929 to 1930 he was an engineer for the Public Service Company of Northern Illinois, and from 1930 to 1932 was a research engineer in Acoustics in the Building Materials Laboratory of the United States Gypsum Company. He was a special graduate research assistant in physics in the engineering experimental station of the University of Illinois from 1932 to 1934, and was instructor in the physics department of the University of Illinois from 1934 to 1936. During the period from 1932 to 1936 he carried on graduate work, receiving the M.S. degree in 1933 and the Ph.D. degree in 1936. Since 1936 he has been a member of the sound engineering department of RCA Manufacturing at Camden, N. J. Dr. Morrical is affiliated with the Acoustical Society of America, the American Physical Society, the Society of Sigma Xi, Sigma Tau, and Eta Kappa Nu.



PLANNED ACOUSTICS have been built into the modern decorative scheme of the new Pix Theatre, Rock Hill, South Carolina. As the modern theatre develops and improves, more thought is being given to designing for use rather than elegance in the auditorium proper.

Acoustics as a Decorative Ally

Recommendations that result from actual experience in designing and correcting sound in some Canadian theatres.

BY HAROLD S. KAPLAN

GOOD acoustics may be an ally to your decoration if acoustical correction is considered *with* decoration.

In our theory of moving picture theatre design the patron comes to our theatre to see the picture, and the presentation of the picture to him under the best possible conditions of sight, sound, and comfort, constitutes our problem.

We also believe, however, that the patron should if possible, receive a lift or stimulus from his surroundings and, in the words of the late S. L. (Roxy) Rothafel, "the patrons should feel the spell of the theatre before he reaches his seat." If the theatre building, then, contributes to the enjoyment and entertainment of the patron, it is because it suggests an atmosphere in which the patron feels gay, smartly dressed, and more urbane than he did before he entered. The theatre building should be a "smart" building in its appointment and decoration. Even though the patron might contend that he did not notice the decoration as such, we are quite sure that the subtle quality of smartness is definitely an entertainment factor and for this reason should dominate all other requirements, consistent of course, with good sound and projection.

YOU are wondering what this has to do with acoustics. We believe that the entertainment factor should dominate all other requirements, including acoustical correction, which simply means that if acoustics is to be an ally to decoration it should be subordinated to the decoration and must also be considered *with* decoration and not afterward.

We, of course, do not minimize the importance of the requirements. To achieve beauty or smartness in our decorative scheme, the architect should have some knowledge of all necessary mechanical equipment, lighting, and, of course, acoustics. If acoustics is to be an ally to the decoration it seems reasonable to us that the architect should know something about acoustics, rather than have an acoustical expert with little or no skill in design dominate the appearance of the auditorium.

MOST theatres built today are in the modern style, or if they are at all traditionally stylistic, the style is usually merely suggested in an interior conceived as modern. The modern style is the result of an honest and logical solving of the problems involved consistent with beauty. Acoustical treatment is now a requirement so that our decorative scheme must evolve from satisfying this as well as other requirements.

For this reason the modern style has clarified theatre decoration. We do not strive to conceal the true functions of our requirements behind a mask of classic forms. The function of heating and conditioning of the air in the theatre, for example, has some bearing on the appearance of the completed interior but its obvious forms have spot locations. Lighting, also, has spot locations and to a great extent may be moulded to suit the whim of the designer.

The function of acoustical correction, however, cannot be regulated to spots or isolated locations. It not only influences the shape and form of the auditorium, but it embraces a large area of the walls and, sometimes the ceiling, to such an extent that the decorative treatment becomes the solving by the architect of the acoustical problem. You will notice that we say, *by the architect,* for the architect is the only one who has control of all the requirements of the theatre and can give proportionate importance to each to achieve the smart interior previously mentioned.

WE have noticed, recently, what appears to be a tendency to allow experts in their field to dictate the form of the theatre. This is especially noticeable in the field of acoustics where recent developments and research have considerably broadened and complicated this phase of design. We would not give the impression that we in any way depreciate the great contribution made by acoustical engineers, and those doing research in this field. We feel, however, that any one requirement should not disproportionately dictate the appearance of the whole. If an expert in acoustics is worth his salt he is an engineer or a scientist, rather than a designer or an artist. This also holds for structural engineers and designers of mechanical equipment, such as air conditioning, who have no ambition to design the appearance of any interior. It often happens that when beauty is not considered, the sponsors of the resulting design speak of their creation as a functional design. This sadly overworked word often patently shows that only one pet function is considered. Beauty, with its possibilities of making repeater patrons, is also a function.

From the first sketches we have acoustics in mind and while planning we try to plan for good acoustics which specifically means that we avoid obvious pitfalls in attempting to gather all our functional requirements into one organic whole. By obvious, we mean ceiling domes, curves of large radii, etc., which we more or less subconsciously avoid.

AFTER we have the rough shape of the auditorium which has been determined by requirements governing the seating capacity, height of auditorium, etc., the second stage of designing begins. This will include the co-ordination of lighting colour and acoustical treatment. With a wide range of acoustical material to choose from there is no limit to auditorium treatments and it is not necessary to give the auditorium the least feeling or appearance that the auditorium has been "treated."

The range of acoustical materials suitable for use in theatres includes fibre and sawdust boards, acoustical plaster, rock wool, punched materials, tiles of the nature of Heerwagen tile, tiles that vibrate, and many others.

Carpets, seat backs and draperies, all contribute their share as sound absorbing materials.

Where funds are available, our first choice for our decorative treatment is cloth or damask, which gives a satisfying warmth and richness. This treatment usually extends from the dado to the ceiling or at least to a cornice or frieze.

WITH this treatment, two inches to four inches of rock wool is used behind the cloth where sound absorbing treatment is necessary. No finished plastering is required behind the cloth and the walls are simply rendered. If heat insulating is required, it becomes a simple matter to fill in the remainder of the area with rock wool, masked to permit reflection rather than absorption. The color of the cloth is optional but it is best to use cloth with a light absorption surface such as velour or damask, having an open weave. Black or any dark cloth permits more striking color contrasts and with these contrasts black is not a dead color as might be supposed. Where special treatments are desired, such as the rear of the auditorium or balcony facia, we put rock

(*Continued on Page* 159)

Harold S. Kaplan is a partner in the firm of Kaplan and Sprachman, Architects, M. R.-A. I. C., which, in the general routine of business, did their first small theatre about 15 years ago and immediately became fascinated with this highly specialized building type. As the firm's reputation spread, commissions for theatres grew more numerous until, at the present time, with six theatres on the boards or under construction in or about Toronto, the firm has done over 100 new theatres and alterations in Canadian cities from Ottawa to Vancouver Island. These partners make periodical trips to large American and Canadian cities to investigate new ideas in design and equipment. They also designed the Eglington, Toronto, which won the bronze metal at the bi-annual show of the Ontario Association of Architects in 1937. [*Member Royal Architectural Institute of Canada]*

THE 1940-41 CATALOG

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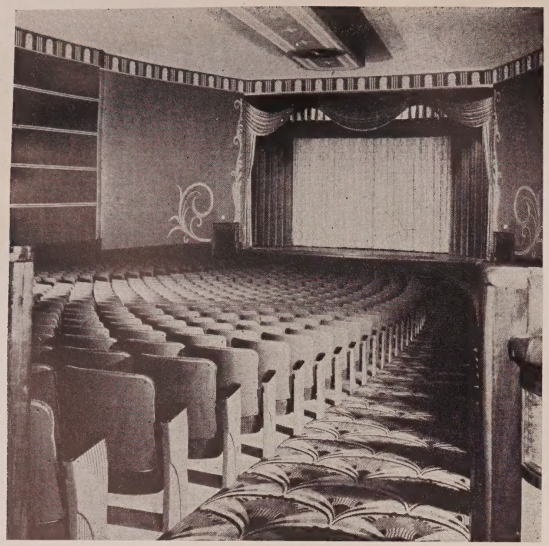

The New DARLTON THEATRE

PAWTUCKET, R. I.

Architect: C. REUBEN MOBERG

Owner: WILLIAM PINAULT and ASSOCIATES

From the Architect's decorative scheme and working in close collaboration with him a very pleasing interior effect resulted.

PAINTING, DECORATING, WALL FABRICS, ACOUSTICAL TREATMENT, and DRAPERIES comprised our contract.

The sidewalls are in light salmon, gold, green, and red pastels capped by a decorative frieze in red and ivory. The stage draperies of bright red velours with gold festoons highlight the auditorium—while two pale green panels decorated in low relief actually frame the proscenium and accent its brilliance. Similar panels at the rear of each wall carry the same general treatment back into the theatre.

Other outstanding features: THE STANDEE RAIL in tufted red leatherette. THE LARGE CENTRAL LOUNGE in gold metallic cloth and green with ivory decorative frieze. THE LADIES' ROOM in rubbed walnut. THE MEN'S ROOM in knotty pine.

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The New ROYAL THEATRE

DETROIT, MICH.

Architect: CHARLES N. AGREE

Owner: WISPER & WETSMAN

As one of the several outstanding Theatre Architects of the Middle West, and with a reputation for excellence to maintain, Mr. Agree was most particular in his requirements and supervision. We feel gratified in the knowledge that we pleased him and met his every demand for both ability, artistic judgment, and workmanship.

DRAPERIES, WALL FABRICS, STAGE CURTAINS and STANDEE AREA CORNICES and DRAPES comprised our contract.

In this theatre which seats 2500 patrons on one floor, the problem presented was to give a large auditorium the intimate warmth that is so desirable in a place of public assemblage. This was accomplished in a very creditable fashion through the use of 160 feet of figured draperies falling in soft folds across the front wall. The 66 foot proscenium arch, itself heavily masked and draped in contrasting shades, is softened and blended into a complete and pleasing effect.

Other outstanding features: THE AUSTRIAN DRAPES falling in rich heavy folds over the standee rail and acting as both an acoustical aid and air deflector. THE FESTOONED DRAPES over each aisle head. An interesting and decorative unit.

A NOVELTY SCENIC STUDIOS
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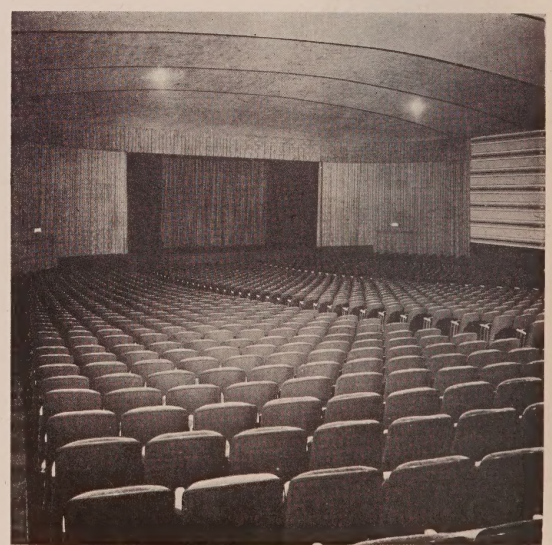

The New CIRCLE THEATRE

NEW YORK, N. Y.

Architect: CHARLES SANDBLOM

Owner: WEINSTOCK CIRCUIT

Here again a competent, theatre specializing Architect received our fullest cooperation to the result of a pleasing and practical structure.

ACOUSTICAL TREATMENT, STAGE CURTAINS, DRAPERIES, and WALL FABRICS comprised our contract.

Using rock wool bats for their unmistakably great acoustical value, the side and rear walls are covered with green homespun with white and gold lines. Green painted wooden moulding strips are paralleled at four foot intervals. The exit doors are draped in rust velour. The stage draperies consist of a modern, green plush boxed valance and legs. The masking side arms and border are of rust velour. Hand painted decorated plush curtains combine all colors.

Another outstanding feature: THE TWO DECORATIVE PANELS over the exit doors, near the stage further augment the decorative scheme of this theatre.

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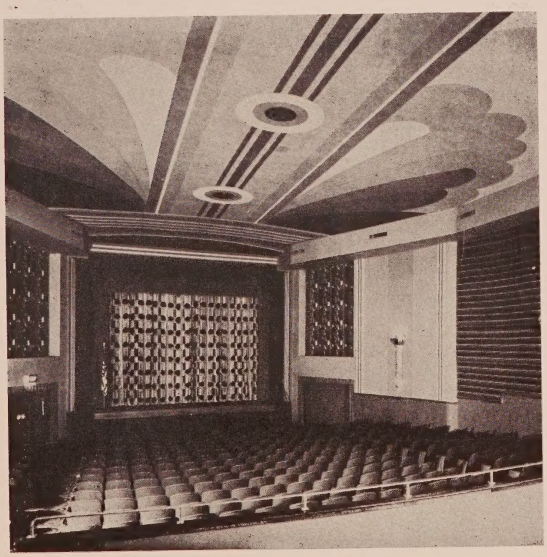

The New STAR THEATRE

TONAWANDA, N. Y.

Architect: MICHAEL DE ANGELIS

Owner: DIPSON-BASIL THEATRES, INC.

Much has been said and written during recent years, about the work of the rising young architect, Michael De Angelis. We are proud to have been identified with many of his projects and this is one of his most recent.

MURALS, WALL COVERING, STAGE CURTAINS, and DRAPERIES comprised our contract.

The dominant decorative features of this auditorium are the murals depicting a neo classic enchantress enticing gay plumaged birds with sweet music. The side wall is broken with a treatment in the form of a broad pilaster with many shadings of soft pastel colors in blended tones to give the effect of depth recesses and heightened by well proportioned metallic four pointed star indirect lighting fixtures. The maroon dado steppings conform to the floor slope. The major side wall spaces are treated with horizontal bands of acoustic velour in blue green tones and the streamline effect is emphasized by metallic mouldings.

Other outstanding features: The simple richness of the STAGE CURTAINS in multi-color finger plush in light and dark shades. And the DRAPERIES and EXIT DOOR DRAPES brought out in rich red plush.

A NOVELTY SCENIC STUDIOS
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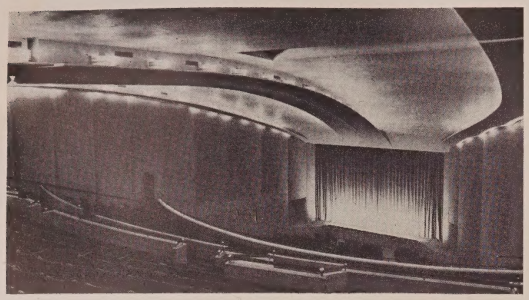
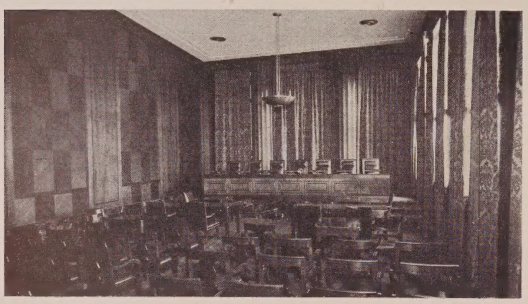
• other miscellaneous projects worthy of note —

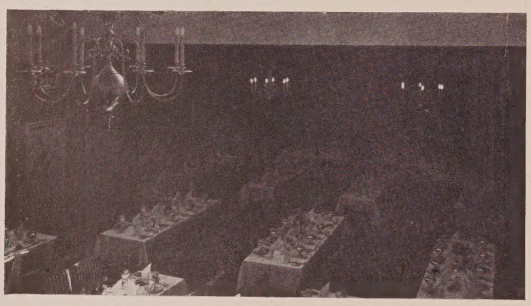


Stage draperies in the main auditorium of the $2,400,000 theatre and art center of the UNIVERSITY of WISCONSIN, Madison, Wisconsin. CORBETT AND MAC MURRAY, *Architects*, LEE SIMONSON, *Consultant*.

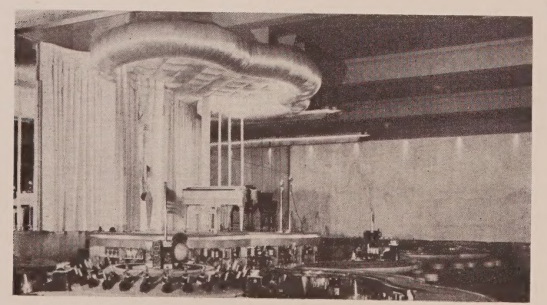
Wall coverings in the Main Exhibition Hall and Naval Exhibition Hall of the FRANKLIN D. ROOSEVELT LIBRARY BUILDING, Hyde Park, N. Y. LOUIS SIMON, *Supervising Architect, U. S. Treasury Dept.*



Curtains and draperies in the VIRGINIA STATE LIBRARY and SUPREME COURT BUILDING, Richmond, Virginia. CARNEAL, JOHNSTON, AND WRIGHT, *Architects*. ALFRED MORTON GITHENS AND FRANCIS KEALLY, *Associates*.



Draw curtains and draperies in the select HOLLAND HOUSE RESTAURANT in ROCKEFELLER CENTER, New York, N. Y. VAN DER GRACHT AND KILHAM, *Architects*.



The unique, white satin stage shell at the famous restaurant ROGERS CORNER, New York, N. Y. FRANK LAPASSO, *Architect*. JOE ROGERS, *Owner*.

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(Continued from Page 154)

wool behind punched steel or punched asbestos board materials which may be painted. Flat ceilings are good acoustically as well as economically, and striking effects may be obtained by making the ceiling a series of drops the same length as the truss, spacing each drop higher than the preceding to the back of the house. The depth of these drops between ceiling levels may vary from six inches to a couple of feet. With this treatment, the monotony of flat surfaces is avoided by carrying light troughs from the proscenium to the rear of the house.

For smaller, more moderately priced houses we use painted plaster walls, without pilasters where possible, making use of two or three horizontal wood mouldings dropped every 15 feet or so to make a dado of uniform height above the floor. Sometimes treatment is required only on the rear wall and here we often use one of the various fibre boards of one-inch thickness. We lay this up with butt joints treating the material as a wall surface and not as a series of blocks. We always avoid staggering the jointing of blocks and giving them bevelled joints to simulate ashlar, unless a classic treatment is desired. In modern design, it is better to lose all jointing. If this is not possible it is better to use square blocks. The block should be large to be in scale with the auditorium and we usually check the size by drawing to scale on the elevation. If more absorption is required than can be accommodated on the rear wall, blocks may be grouped on the side walls in a vertical treatment by making panels several feet wide at about the same spacing as the trusses. If an elongated electric fixture is placed on this panel, the acoustical correction is completely lost in the decorative scheme.

SOUND authorities agree that it is better to use greater amounts of corrective materials having comparatively low coefficients uniformly distributed than to use material with a higher coefficient and confine it to widely separated positions. However, a satisfactory compromise may be made without ruining the sound by isolating the material in separate panels. Otherwise, decoratively, a very spotty effect would be obtained which might not compensate for the slight increase in efficiency.

Often there are certain locations where it is desired to trap the sound instead of absorbing it. Here we have an opportunity to design an ornamental grille of plaster or metal.

Atmospheric or elaborate architectural side wall treatments present a special acoustical problem. The plaster simulating masonry may be of a very porous type, especially adapted to this purpose. Arches, coffered niches and windows present an opportunity for more sound absorption than afforded by the plaster masonry.

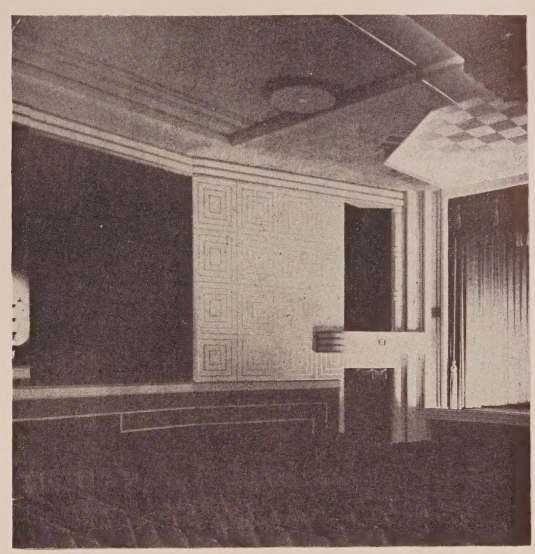
UNLESS the designer prepares elaborate color details before the plastering is started it is best to avoid colored impregnated acoustical plasters for they do not permit the flexibility of color afforded by painting. Where the whole of the auditorium above the dado is to be covered with a fibrous board, no additional correction is usually required, and the surface is pleasing enough to be left natural without painting. Bands of acoustical board or painted ornament may be used without detriment to the acoustical properties.

We have occasionally used acoustical plaster on the side walls and with the integral coloring employed have achieved some warm and colorful auditoriums. We have found that some other acoustical material is usually required in addition for special locations, particularly the rear walls. As it is not possible to match the coloring in the plaster with the coloring in other materials, due to differences in light reflection of surfaces, it is advisable to frankly change the decorative scheme with the new material.

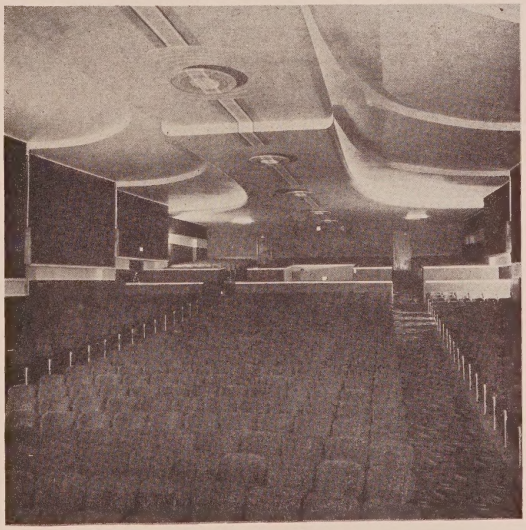
Some successful interiors have been created with Haydite (porous concrete) curtain and bearing walls painted without plastering. Bold effects have to be used in painting as the masonry joints dominate the surfaces. This material may take care of the side wall absorption requirements with some additional acoustical correction on the rear wall only.

HEERWAGEN tile is least successful decoratively than other materials we have used, especially in small auditoriums, because it is impossible to loose the block effect due to the deep recesses between blocks. Because of the fixed scale due to the one size block and also because blocks must be cut to go around corners, leaving raw looking joints this material has its limitations. We have treated these blocks in vertical isolated panels on the side walls, and continuous panels laid with the length of the auditorium, on the ceiling. They are least objectionable on ceilings where the coffered effect is not unpleasant. We have found that doubling or trippling the width of the vertical joint at regular locations, or introducing a vertical or horizontal wood moulding, relieves the monotony over large areas. We avoid painting bands of color on the blocks for they often call attention to the errors in spacing due to careless laying or due to the irregularities of the wall.

One of our recent small theatres on the west coast makes use of fibre board for the whole interior, excepting a dado of Masonite board. No plastering at all was used in the auditorium and a pleasing effect was obtained with the fibre board alone, which, incidently, has made an auditorium which is excellent sound. The board was left "natural", with a small amount of color in bands and on cutouts of fibre board applied to the walls. Horizontal wood painted mouldings were used at the dado. The rear wall, in three flat planes, was divided into three sections above the dado, each section with an outward slope to reflect the sound down, which, in this case, was preferred to total absorption.



THE PRINCESS THEATRE, Sault Ste. Marie, Ontario, Canada. Kaplan and Sprachman, architects. Cloth between the side wall pilasters masks rock wool acoustical insulation.



THE ELGIN THEATRE, Ottawa, Ontario, Canada. Kaplan and Sprachman, architects. Cotton damask over rock wool on the side walls and Acousti-Celotex tile on rear wall produce good results.

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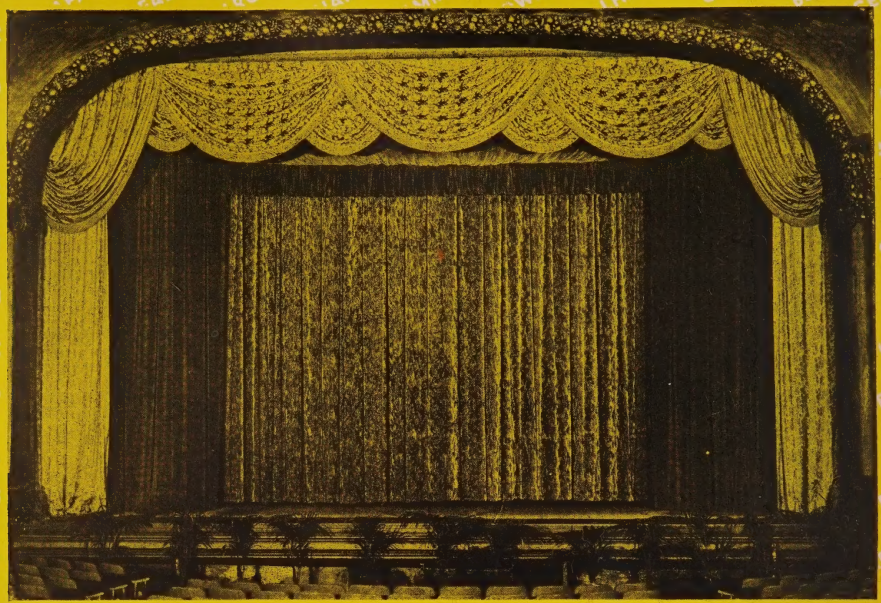

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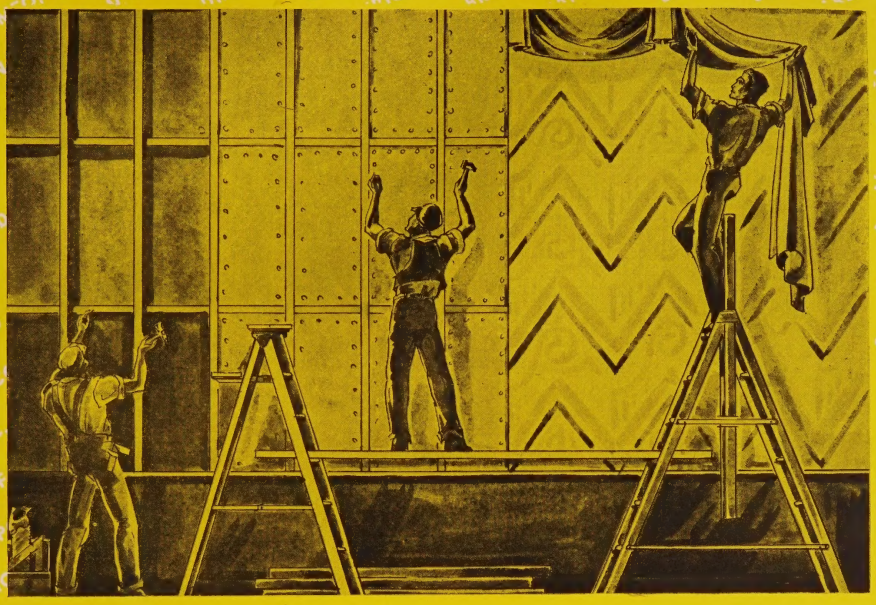

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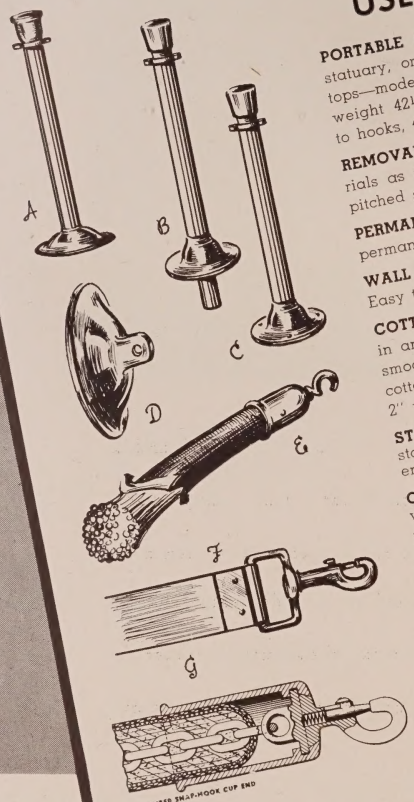

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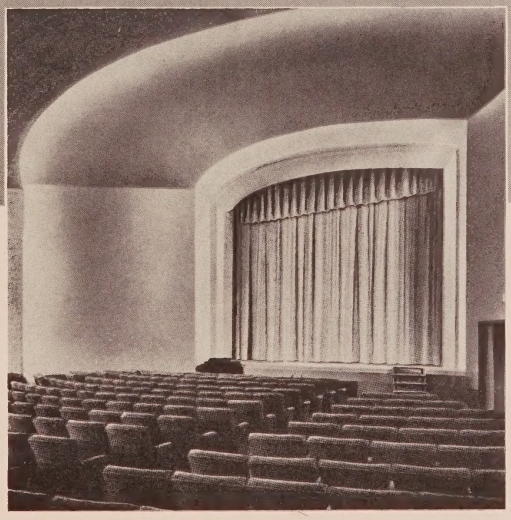

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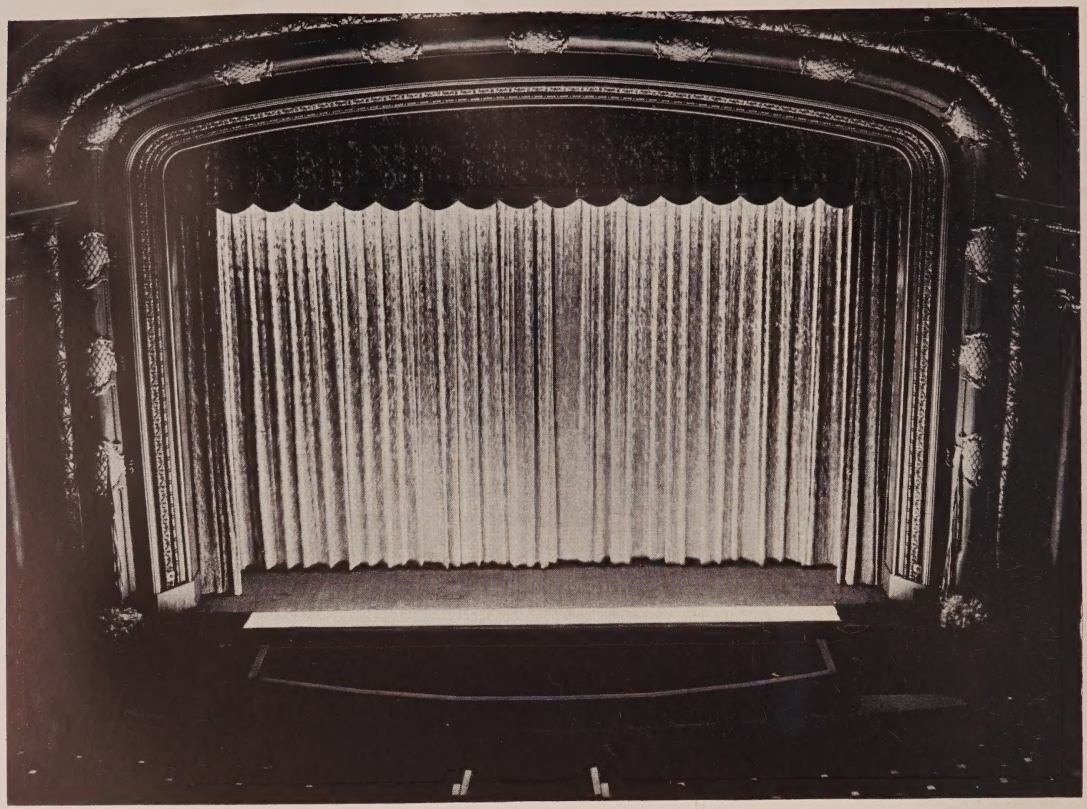

A view of the Warner Brothers Broadway Theatre in Philadelphia, Pennsylvania, with wall fabrics and draperies by Dazian's, Inc.

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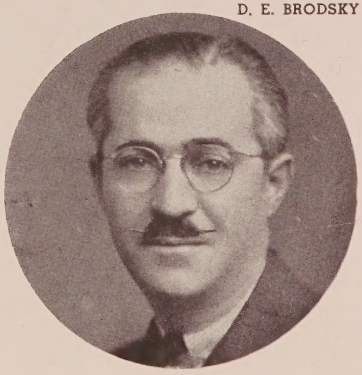

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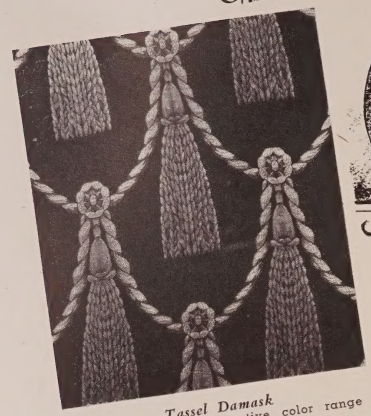

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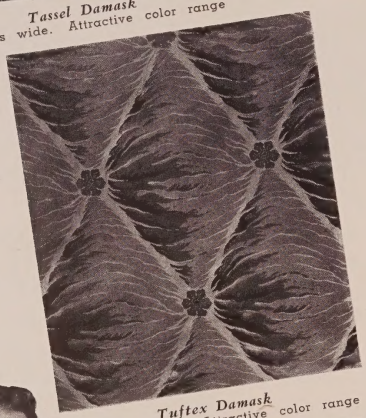

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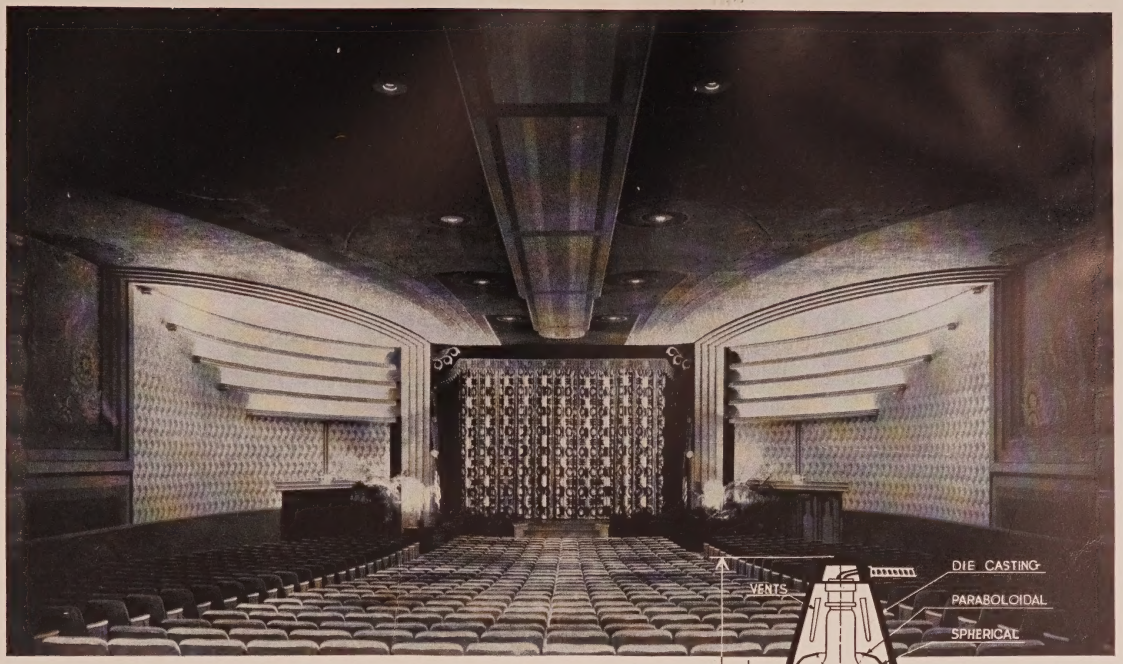
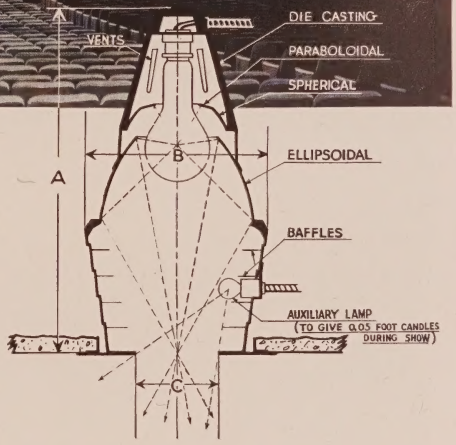


Silver Spring Theatre, Silver Spring, Md. John Eberson, Architect



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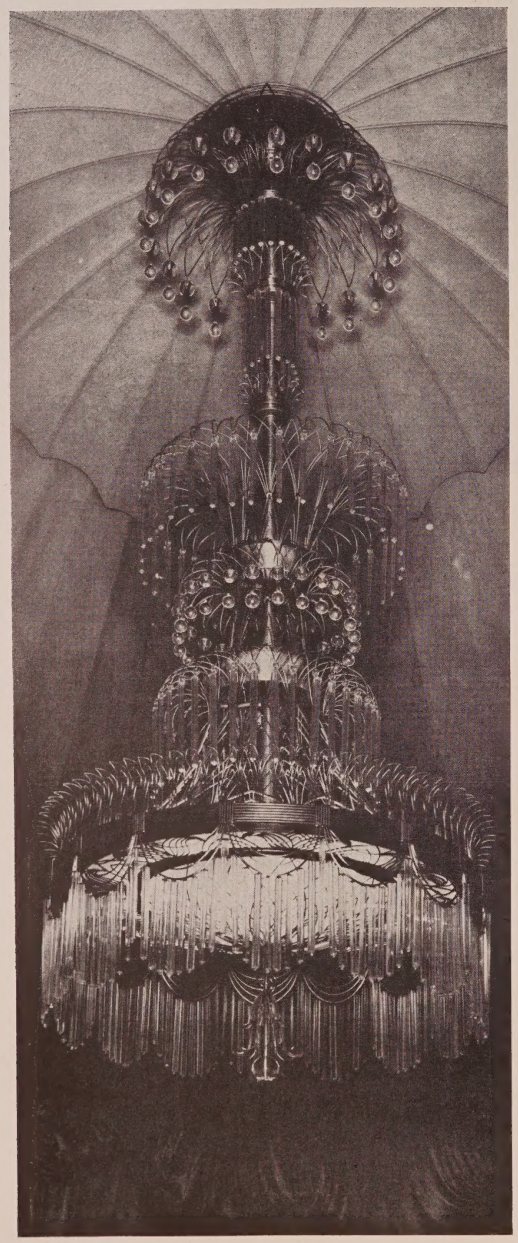

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Minimum Comfort Essentials

The head of the Neighborhood Theatre Circuit of Virginia which operates 24 fine showhouses, gives some timely hints.

BY MORTON G. THALHEIMER

WHAT, if any, obligation does the theatre owner owe to his patrons? So many theatre owners seem to think that all they should do is project one (or unfortunately sometimes two) feature pictures, a news reel and a few short subjects on a screen and that is all that should be necessary. Then they fuss and fume and cuss the product and the public if at the end of each week they fail to show a profit.

It is about time that the operators of theatres—be they owners or tenants—realize that the exhibition of pictures is a legitimate business, a business that has during the last 20 years evolved to a high standard, and that the exhibitor today must evolve and keep pace with the times or else he will be left by the wayside and other forms of amusements will get his patrons' amusement money.

Football, both amateur and professional, softball, golf and country clubs, skating rinks, bowling, radio (possibly television in the near future) are all knocking at the door of the public's "amusement dollar."

THE theatre owner is dead on his feet and doesn't know it if he thinks he can ignore these and other factors that are competing with him for this much sought after amusement dollar.

What, if anything, should the theatre owner do? Give up? Surrender? Pray for a return of better days? Complain about the weather? Talk it over with the film salesmen? None of these will help.

THE first thing to do is take inventory of your physical property and of your operating methods. A movie theatre today in order to be successful must be up-to-date and in most cases thoroughly modern. Here are some of the minimum essentials that the theatre owner owes his patrons:

First: THE THEATRE FRONT—This should be attractive; if possible, no stores on either side. The front is the show window of the theatre. Attractive display frames are not only necessary but essential. A modern, attractive marquee with attractive boxes on the sides and front. Have plenty of light under the marquee. The box office should be out at the front at a convenient place for the patrons. The front should be architecturally correct, not just a conglomeration of brick or glass or marble or stucco. It should, in its entirety, be a thing of beauty and should blend with the neighborhood and be in keeping architecturally with its surroundings. Hence, a front most appropriate for a down-town location may be entirely out of place in a residential neighborhood location. To deserve patronage you should do your part to make the theatre fit perfectly into its location and encourage all possible patrons to be proud of their theatre. In neighborhood locations, a parking lot is very helpful.

Second: THE LOBBY AND LOUNGE—As one enters the theatre it is comparable with coming inside a store. The first impression is important. Hence the lobby and lounge need careful treatment. Have proper lighting fixtures, carpet of the correct color, design and quality, furniture that fits into its proper setting. For example, modernistic furniture on the interior of a colonial exterior would be out of place. A drinking fountain correctly located is always appreciated and helpful. Once again, the architect and a good interior decorator play a most important part. The lobby and lounge are essential,—they must be attractive, pleasing, comfortable and appealing. The patron must be proud to show it all to his friends.

Third: REST ROOMS AND TOILETS—These conveniences furnished for your patrons are indeed important. Dirty, ill-kept toilets and rest rooms shriek out and say "Don't patronize this theatre, the management is interested only in the admission price and not in your comfort." Toilets and rest rooms must be modern and up-to-the-minute in equipment. They must be sufficiently large, the fixtures should be of the best, at least as good as your patrons have in their own homes, and, if possible, better. Cleanliness is essential. There is no excuse for dirt and filth. Good ventilation, soap, towels, toilet paper and a frequent "clean-up" visit at regular intervals by a maid and porter should be on your MUST list. You will be surprised how patrons appreciate good rest room facilities and resent it when they are lacking.

Fourth: THE BOOTH—It is true few patrons ever see the booth. However, there is no substitute for a good, modern booth. The equipment should be modern and up-to-date. Everything necessary for perfect projection, the best of lamps for a good clear-cut picture, good sound equipment properly serviced.

Necessary conveniences help the operator so he can work comfortably and thereby do his work well and efficiently. Remember, the patron does not excuse bad projection and poor sound—he simply doesn't come back if your competitor has you beaten in this respect.

Fifth: HEATING, VENTILATION AND COOLING—The mechanical department, usually located in the basement, plays a very important part. Proper heating and cooling, with the air fresh and clean and pleasing, keeps patrons happy and satisfied, free of headaches. There is no substitute for those essentials. Get the best and keep them in perfect condition.

Sixth: THE AUDITORIUM—Much money has been spent on the interior of theatre auditoriums, some wisely and much foolishly. The theatre auditorium of 1941 should be pleasing but not gaudy; comfortable, but not loud. It is a combination of good, comfortable seats, quiet, well carpeted aisles, a mastic tile floor covering over the concrete for patron comfort, nicely decorated walls, proper well-designed lighting fixtures, a well-draped and curtained stage, all properly heated and ventilated. The attention of the patron should unconsciously be drawn toward the screen. The balance of the auditorium should create a sense of restfulness and sub-conscious ease and relaxation. The lighting should be soft and subdued and restful but not sombre. The chairs should be extremely comfortable and spaced sufficiently far apart for leg room and ease of passing. Here is the place where your patron actually spends his two hours. You can afford to be extravagant for his comfort. Ample exits properly lighted are essential. No theatre can afford to take the slightest chance on the safety of its patrons.

Seventh: SERVICE DEPARTMENT—Manager, cashier, doorman, ushers, porters, maids, etc., should be properly dressed and uniformed. Politeness, courtesy, friendliness are minimum essentials. In poorly patronized theatres you usually find unfriendly employees and management.

Eighth: BOOKING OF PICTURES—Be sure your pictures are properly booked and the program well rounded with shorts. Study the desires of your patrons and try to book your pictures in accordance with their habits and wishes. Good, appropriate booking usually means more money at the box office.

Ninth: ADVERTISING DEPARTMENT—The pictures will not sell themselves. Newspapers, programs, publicity, sales promotion are necessary. Find the best way to tell the public all about the picture and your program.

TO SUMMARIZE: It can truthfully be said that the exhibitor does owe a definite obligation to his patrons.

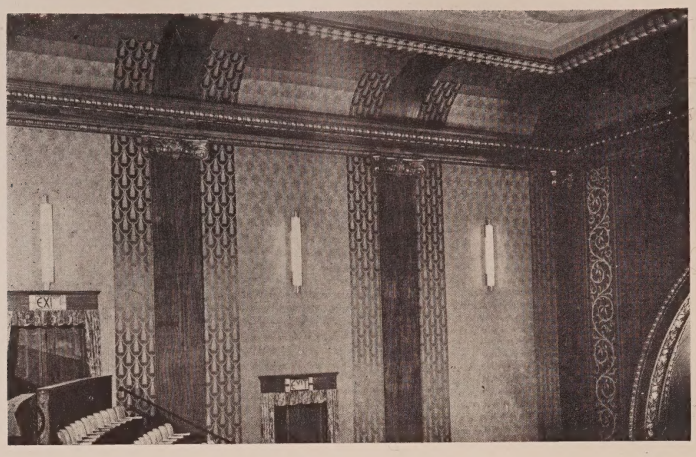
The proper co-ordination of:

The Theatre Front
The Lobby and Lounge
The Rest Rooms and Toilets
The Booth and Projection Department
The Heating and Ventilating System
The Auditorium
The Service Department
The Booking Department
The Advertising Department

will under almost any conditions produce satisfied patrons.

THE producer is trying to do his part. It's now up to the exhibitor to step out and bring his theatre up-to-date and really go to town in fulfilling his obligation to the movie patron. Can we all truthfully say we have done our full part?

ACOUSTICAL ROCK WOOL



BROADWAY THEATRE, Philadelphia, Pa. Warner Bros., Owners. GEO. R. HALL & SONS, Acoustical Rock Wool side and rear walls. Installation by Chas. H. Kenney Studios, Inc.

GOOD SOUND ADVICE—*Select the Right Acoustical Material!*

THERE ARE MANY ACOUSTICAL MATERIALS; it is important to choose the right one. Optimum theatre acoustics cannot be achieved by using, for example, an acoustical material designed for noisy corridors.

THE PROBLEM OF THEATRE ACOUSTICS IS SPECIALIZED; to control reverberation and eliminate detrimental sound reflections *without* impairing the beauty and excellence of the reproduced sound by *overabsorption* of certain sound frequencies and *underabsorption* of others. Rock Wool prepared especially for motion picture theatre acoustical treatment provides the *high efficiency* and the *balanced* sound absorption characteristics essential to good theatre sound.

GEO. R. HALL & SONS' ACOUSTICAL BLANKETS are made of selected acoustic Rock Wool of such density and in form to provide the maximum acoustic efficiency and practical service in theatre installation.

ROCK WOOL is a mineral fibre made from limestone. Mineral in origin, it is incombustible, vermin proof, and it does not disintegrate. Its cost is low. Its efficiency is permanent.

INSTALLATION—Rock Wool Acoustical Blankets are easily installed in the construction of new and when remodeling or redecorating existing theatres.

"The most successful treatment of sidewalls and auditorium is conceded to be the application of one inch Rock Wool blankets on strips holding the blanket one inch from the brick wall and the covering of same with rayon damask materials or erect pile velour, thus giving the auditorium a soft and elegant appearance. . . ."

JOHN EBERSON, Architect.

Best results are usually attained when the Rock Wool is applied by the drapery contractor applying the finish decorative fabric.

A few representative installations in new and remodeled theatres.

AMERICAN THEATRE, Bronx, N. Y.
HIGHLAND THEATRE, Washington, D. C.
OSWEGO THEATRE, Oswego, N. Y.
TIMES THEATRE, Cincinnati, Ohio
Mr. John Eberson, *Architect*

AVON THEATRE, Stamford, Conn.
HARLEM GRAND THEATRE, New York City
Mr. Wm. I. Hohauser, *Architect*

HARRIS-MANOS THEATRE, Jeannette, Pa.
PENN THEATRE, Titusville, Pa.
Mr. Victor A. Rigaumont, *Architect*

CIRCLE THEATRE, Bronx, N. Y.
MAYFAIR THEATRE, Flushing, N. Y.
Mr. C. A. Sandbloom, *Architect*

ACADEMY THEATRE, Liberty, N. Y.
STUDIO THEATRE, Philadelphia, Pa.
Mr. Ben Schlanger, *Architect*

Century Circuit's
FARRAGUT THEATRE, Brooklyn, N. Y.
COLLEGE THEATRE, Brooklyn, N. Y.

Loew's
PALACE THEATRE, Hartford, Conn.
CENTURY THEATRE, Brooklyn, N. Y.
VICTORY THEATRE, Evansville, Ind.

R.K.O. Circuit's
GRAND THEATRE, Cincinnati, Ohio
PELHAM THEATRE, Bronx, N. Y.
PALACE THEATRE, Syracuse, N. Y.

Schine Circuit's
GRANADA THEATRE, Buffalo, N. Y.
RIVERSIDE THEATRE, Buffalo, N. Y.
STRAND THEATRE, Ogdensburg, N. Y.

Warner Brothers'
EARLE THEATRE, Philadelphia, Pa.
UPTOWN THEATRE, Washington, D. C.
NEW BABCOCK THEATRE, Wellsville, N. Y.
ROOSEVELT THEATRE, Newark, N. J.

TYPES—Rock Wool fibres are felted to form a uniform blanket which is covered with a light weight muslin porous to sound, to confine the fibres, and reinforced with wire mesh to permanently secure the blanket and support it when installed.

"A"—Covered with flameproof muslin on one side and all edges and reinforced with diamond mesh metal lath on face (muslin) side and with wire netting on back. Standard size 2′ x 8′, 1″ thickness.

"B"—Covered with flameproof muslin on one side and all edges and reinforced on face and back with wire netting. Standard sizes 2′ x 8′, 1″ thickness.

"FpM/W"—Covered with flameproof muslin on one side and all edges and reinforced on back with wire netting. Standard sizes 2′ x 8′ and 2′ x 16′, 1″ thickness.

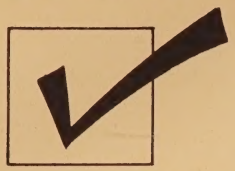
Other sizes and other types of wire reinforced and stitched muslin and paper covered blankets to order.

GEO. R. HALL & SONS *Manufacturers of* ACOUSTICAL ROCK WOOL
516 FIFTH AVENUE : : : NEW YORK

GEO. R. HALL & SONS

A SERVICE TO YOU that we are glad to render! TRY IT!

MAY WE BE OF HELP?



Check the items for which you are in the market and on which you need additional information . . . we will get it into your hands quickly and completely from reliable dealers and manufacturers!

FILL IN : FOLD : SEAL : AND MAIL! NO POSTAGE : NO COST : NO OBLIGATION!

- ☐ Acoustical Treatment
- ☐ Acoustical Materials
- ☐ Acoustical Service
- ☐ Admission Signs
- ☐ Air Conditioning System
- ☐ Air Conditioning Blowers
- ☐ Air Conditioning Distributors
- ☐ Air Conditioning Filters
- ☐ Amplifiers
- ☐ Amplifier Tubes
- ☐ Architect

- ☐ Batteries
- ☐ Bookkeeping System
- ☐ Booth Supplies
- ☐ Boxoffice
- ☐ Boxoffice Equipment
- ☐ Business Boosters
- ☐ Bathroom Accessories
- ☐ Building Materials
- ☐ Building Service

- ☐ Cabinets
- ☐ Cans
- ☐ Carbon Adapters
- ☐ Carbons
- ☐ Carpets
- ☐ Chair Accessories
- ☐ Chairs
- ☐ Changeable Letters
- ☐ Changeovers
- ☐ Coin Changers
- ☐ Color Wheels
- ☐ Condensers
- ☐ Converters
- ☐ Curtains
- ☐ Curtain Controls
- ☐ Curtain Track
- ☐ Cycloramas

- ☐ Decoration
- ☐ Deodorants
- ☐ Desks
- ☐ Dimmers
- ☐ Door Hardware
- ☐ Draperies
- ☐ Drapery Materials
- ☐ Drinking Cups
- ☐ Drinking Fountains

- ☐ Effect Machine
- ☐ Exit Signs

- ☐ Fans
- ☐ Film Cases
- ☐ Fire Extinguishers
- ☐ Fire Hose
- ☐ Fire Shutters
- ☐ Flashlights
- ☐ Fluorescent Paint
- ☐ Floodlights

- ☐ Floor Lamps
- ☐ Flooring Materials
- ☐ Fluorescent Lighting
- ☐ Footlights
- ☐ Frames
- ☐ Front Re-building
- ☐ Furniture
- ☐ Flooring

- ☐ Generators
- ☐ Glass Sign Letters
- ☐ Glass Brick

- ☐ Hand Rails
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- ☐ Hardware
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- ☐ Heating Equipment
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- ☐ Rewind Tables
- ☐ Roofing Material
- ☐ Rubber Mats

- ☐ Safe
- ☐ Screen
- ☐ Seats
- ☐ Showcard Paints
- ☐ Sign Flashers
- ☐ Sign Letters
- ☐ Signs
- ☐ Silhouette Letters
- ☐ Slides
- ☐ Sound Equipment
- ☐ Sound Service
- ☐ Speakers and Horns
- ☐ Spotlights
- ☐ Stage Draperies
- ☐ Stage Hardware
- ☐ Stage Lighting
- ☐ Stage Rigging
- ☐ Stair Treads
- ☐ Standee Posts
- ☐ Stereopticons
- ☐ Switchboard
- ☐ Structural Glass

- ☐ Theatre Hardware
- ☐ Theatre Games
- ☐ Theatre Premiums
- ☐ Ticket Booths
- ☐ Ticket Chopper
- ☐ Tickets

- ☐ Uniforms
- ☐ Upholstering Materials

- ☐ Vacuum Cleaners
- ☐ Vending Machines
- ☐ Ventilating

- ☐ Wall Covering
- ☐ Wind Breaks
- ☐ Work Lights
- ☐ Water Proofing

OTHER ITEMS

- ☐ .....
- ☐ .....
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- ☐ .....
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Owner Manager Maint. Eng. Architect Purchasing Agent Supply Dealer

NAME_____

THEATRE or COMPANY_____

ADDRESS_____

FIRST CLASS
Permit No. 888
(Sec. 510, P L & R)
Philadelphia, Pa.

BUSINESS REPLY ENVELOPE

NO POSTAGE STAMP NECESSARY IF MAILED IN THE UNITED STATES

4c-POSTAGE WILL BE PAID BY—

JAY EMANUEL PUBLICATIONS, Inc.

1225 Vine Street

PHILADELPHIA, PA.

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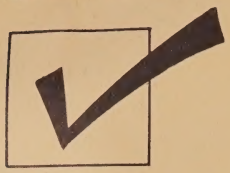

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Manager Purchasing Agent
Maint. Eng. Supply Dealer

NAME _____

THEATRE or COMPANY _____

ADDRESS _____

A SERVICE TO YOU that we are glad to render! TRY IT!

The Theatre Exterior

Typography in Changeable Letters

Multi-sized letters permit so much more flexibility that proper arrangement can develop an unprecedented sales punch.

BY FRANK MILLER

SUCCESSFUL advertisements don't just happen. The particularly striking one that you read in last night's newspaper, the effective type arrangement that caught your eye in the subway this morning, and the short crisp message on the menu that made you want celery soup this noon were not the result of a slap dash, hurried, hit or miss filling of white space but were aimed at you with the same care, precision and expert knowledge that attends the aiming of a big naval gun. When they hit their target by selling you on the merits of a Packard, the quality of Wrigley or the tastiness of Heinz—that's marksmanship.

AS an outsider looking in—and, due to occupation, vocation and hobby, one with a critical eye—it has often amazed me that definite carelessness, lack of ability, rush or a combination of all three results in theatres shackling their best potential sales producer—their changeable letter marquee signs. Here is point-of-sale advertising. Here is the all important possibility of "closing" the prospect attracted by your other advertising and your bright lights. Here is the spot to instill the desire-to-buy in the mind of every casual passer-by. Don't muff it! The well-designed, serviceable building is the result of studied designs and carefully prepared plans. The most forceful expression of the printed word results from the same studied design and carefully prepared "layouts." Give your sign space this same attention and it will become the efficient "salesman" you want it to be.

YOU know the size limitations of your marquee space. You know that silhouette letters and even glass letters are now available in sizes of from six inches to 36 inches with many word combinations. You have the means of putting them where you please, limited only by the hanging devices and their spacing. You can make up definite, minute scale drawings of your marquee opening with the positions and distances of the hanging rods. You can use rubber stamps, stencils, or a black pencil to put the letters in position. Now let's approach the problem.

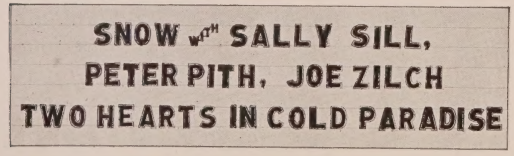
The principles of design, as they concern type compositions are as follows:—

1. Contrast
2. Balance
3. Rhythm or Unity

SUCCESSFUL advertisements combine and weld all of these principles into a single composition of force and strength. Successful advertising men have acquired by practical experience a "feel" for satisfactory arrangements and a "vocabulary" of usable schemes to call on when faced with each new problem; but their experience is only a faithful working out of the above principles. Your limitations of size, shape and "all cap" characters don't permit as much diversification so you won't have to learn as much as they do, but the principles are just the same. Let us follow them.

This—

Not This—



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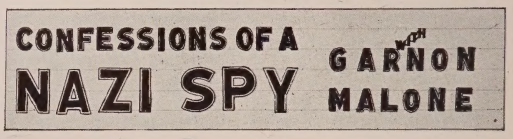

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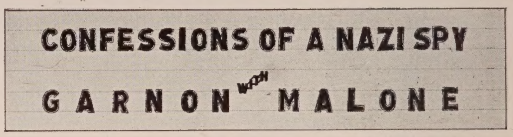


A CONSIDERATION OF CONTRAST

CONTRAST generally means the elimination of monotony. There should be no long lines, one under the other, of letters of the same size, no trying to sell both features with the same prominence in the same limited oblong, no attempting to carry a long title in its entirety in the same letter size, no all-over sameness. It is the element that makes the type word sparkle and strike the eye with an impact that make it read. It draws the eye. It is the arrangement that conveys the quick punch of interest that constitutes the main effectiveness.

Accompanying illustrations of "do" and "don't" serve to illustrate the working of the principle of contrast from samples made up by the writer.

A CONSIDERATION OF BALANCE

EVERY effective layout requires stable equilibrium. The masses must be so arranged against one another that they appear to have settled into the positions they occupy and to belong there. No single unit or title should convey to the eye of the reader the idea that it is struggling to go somewhere else in the layout, nor should the layout look as if it were about to topple over.

MECHANICALLY balancing the elements in a layout is achieved by the trial and error method. Practice and a trained eye eventually results in the particular individual's ability to estimate the best form that will produce balance to the copy at hand. In printing, the first rough proof in actual type may disclose glaring mistakes in balance that can be cleared up by slight adjustments in the location of the body and display, by squaring up with a rule border or by the addition of lines here or there. Naturally, this flexibility is not at your disposal with sign letters—but you do have the advantage of always working inside of an established border and of requiring the placing of only a dozen or so words. In your case, the dominant rule should be to "flush" all lines of titles, cast groupings, etc. at the sides. This will produce a squared off effect that is most forceful as compared to any conceivable staggered effect.

VISUAL balance dependent on the focal center, while highly important in the type advertisement, is not of paramount interest in your marquee layout. I would estimate that as long as the eye must look up to read your message the center of focal interest is the lower half of your marquee. If your picture title is your most important message, ("Gone With The Wind",

"Snow White", etc.) then it will be most noticeable and most effective on the eye of the passing prospective patron if it occupies the lower half. If your cast outshines the picture title, (Deanna Durbin, Mickey Rooney, etc.) then give it the lower half.

AS most marquees are wider than they are high, groupings of the component parts of the show can be interestingly accomplished so long as the weight is equally balanced. In other words, two lines of 36″ letters spelling out the title can be used at one end so long as four lines of 18″ letters or three lines of 24″ letters, etc. giving the cast, stage show or featurettes, balance their weight at the other end. One of the most glaring mistakes which I have noticed in this type of theatre layout is the failure to flush the sides of each individual unit. Theatre managers seem to have failed to notice how printers "letter-space" to fill: that is, take a line of 28 letters and by compensating with a shade of space between letters stretch it out to take up the same space as the line above it which has 32 letters. This little spreading of type accomplishes effects like:

DEAD END KIDS
A STUDY IN MOB PSYCHOLOGY WITH THAT RENOWNED CHARACTER ACTOR - HUMPHREY HUNT

which, if one of two units, is superior in effectiveness to:

DEAD END KIDS
A STUDY IN MOB PSYCHOLOGY WITH THAT RENOWNED CHARACTER ACTOR HUMPHREY HUNT

The latter runs all over the place to its own and the reader's confusion, while the former has balance and sock.

STILL another glaring error in balance is the inveterate habit of dressing your signs with the large letter titles on the left and the casts, featurettes, etc. on the right, even when the left side of the sign abuts the building. It's all well and good to argue that people read from left to right—but the most prominent spot on your marquee is that which projects out over the sidewalk and street, away from the building line. That's the place to hit the eye with your largest letters and most important story. If your marquee has two sides, each should be treated as a layout problem in itself, with your sock story just as bold and prominent on the street end of each as it is possible to accomplish.

FEW marquees permit the use of more than the two units mentioned above. If you are one of the fortunate few, it is a generally accepted rule that when four units are to be used, they are paired off. When five or more units are used, they are grouped into two larger units, opposed to each other.

THE compositor in a printshop with all of his background knowledge and experience still pores over the resultant proofs and fixes them to his sense of proportion and balance before OKing the form for press work. You, in your sign work, probably don't have that time or opportunity. It would seem to be a good idea, however, to analyze each day's sign effect. Take a walk around the block and view it from all angles of effectiveness. Every good layout that you work out becomes part of your "vocabulary" of usable schemes and builds up in your consciousness a reserve of successfully solved problems. Every bad layout should be analyzed for its flaws and mental notes made for their avoidance in the future.

A CONSIDERATION OF RHYTHM OR UNITY

BECAUSE these three component parts of good composition are inter-relating, much that has been said prior to this has bearing on the good proportions in lines or units which produces this third. Good proportions are those where the mathematical relations between the parts are not obvious. The human eye unconsciously scales the object at which it looks. The most easy and obvious scale is the 2 to 1 proportion. Therefore, it is bad judgment and monotonous to divide space equally between two units. Better to sacrifice one with only one third of the space and let the other dominate with its two thirds. There is an old principle of advertising that "The ad that tries to sell two things with equal force—sells neither." It's a swell rule to be remembered not only in your sign work but in your other advertising.

IN studying the old masters in the field of art, one of the outstanding characteristics that removed them from the herd was their sense of unity and rhythm in their proportions. For more than 2000 years, their feel for effective layout has been leaned upon and applied by every field that creates. One of their basic schemes was never to allow small units to stray off by themselves and never to be obvious in their proportions. Applying this scheme, we can readily see the difference.

This—

(2) GABLE AND LOMBARD
(1) A SENSATIONAL HIT!
(3) "COMRADE X"

Not This—

(3) "COMRADE X"
(2) GABLE AND LOMBARD
(1) A SENSATIONAL HIT!

Lines of small type should be worked up into the whole rather than be let tag along. Of slightly lesser effect the above could be arranged:

(1) A SENSATIONAL HIT!
(3) "COMRADE X"
(2) GABLE AND LOMBARD

AS I bring this tome to its completion I am told that a new development in the changeable letter field will make available at an early date a means of illustrating marquees with photographs and artwork. This opens still more interesting and inviting prospects in effective sign selling. Several years ago I noticed on the marquee of the Roxy Theatre, New York City, the use of large silhouettes of dancing girls and a stage band that gave interest and ornamentation to their selling space. Frankly, I've wondered why this idea was not merchandised by interested companies and made available to all theatres. A musical picture could visually present itself as such through the use of dancing figures; a comedy through laughing faces; a horse opera through a bucking broncho, etc. In the featurette field, there is still another application. Many of these little gems are left off the marquee because room doesn't permit a line reading "ALSO: MICKEY MOUSE AT THE CIRCUS" or "ALSO: POPEYE VISITS POOPDECK". It is perfectly conceivable however, that a silhouette of the little rodent or the popular muscle bender could be worked effectively into any marquee layout and let us mugs who buy tickets know that they're on the bill.

ON the whole, I have two parting observances. First: Architects and owners don't seem to realize the selling importance of their changeable letter signs and therefore don't allow sufficient space for copy adequate to the product they are selling. Second: Theatre managers seem to devote more attention to the relatively small circulation heralds and lobby frames that you must be virtually at the boxoffice to see than to their most effective sales medium that can be seen for blocks by every casual passerby. When I see an usher or porter climb the ladder with a carefully prepared miniature layout in his hand—and see the manager stand and proofread the result—I'll withdraw this latter squawk.

Porcelains, Glass and Plastics

New and modern materials are the perfect allies to new and modern design in theatre fronts.

BY JACK CORGAN

Jack Corgan, 29, of the firm of Corgan and Moore, architects, received his college education in architectural training at Oklahoma A. and M. College, and has been in private practice for five years. In that period he has designed 46 theatre buildings, either remodelling operations or new structures. Theatre jobs of Corgan and Moore have been completed in various parts of the southwest, principally in New Mexico, Oklahoma, Texas, and Arkansas. The firm does the architectural work for the Griffith Amusement Company of Oklahoma City, R. E. Griffith Theatres, Inc., of Dallas, Robb and Rowley United, Inc., of Dallas, and for other independent exhibitors. At the time the article was written the company had 14 theatre buildings either under construction or on the drafting boards.

THE architectural profession knows, possibly better than all others, how history repeats itself in periods, styles, and materials. Yet, periods, styles, and materials are often disguised in a new era to such an extent that they are hardly recognized.

AS an illustration of an old material coming back to be used in an entirely different form, we take porcelain enamel. Porcelain enamel is very, very old. It was made and used so long its origin was lost centuries ago. Thousands of years ago nations of the Orient, China especially, were making porcelain enamel. The larger metropolitan museums, art schools, and some private collections have porcelain enameled art objects hundreds and thousands of years old, all in a perfect state of preservation. But, in spite of the fact that the art of making porcelain objects has been known all this time, it was left up to the present generation to find a new use for this old material in applying it to building construction.

STILL another old material, glass, has come out of hiding and has presented itself in an entirely different form for the architect to use or present to this era originality, permanence of color, and flexibility of design in forms and styles so different yet similating so nearly the old arts of the glass blower. The glass blower, in days gone by, created forms, shapes, and effects very beautiful yet impractical for use as a building material. These old shapes and forms are being created today in very much the same styles but of a much stronger and more durable product with strength to withstand modern day strains on building materials. Thus the history of styles and materials repeats itself in glass.

THE STATE THEATRE, CLOVIS, NEW MEXICO, effectively combines the use of tile brick, face brick, terra cotta, and glass brick with a generous and moderate marquee treatment.

THE NEW THEATRE, LITTLE ROCK, ARK., owned by the Arkansas Amusement Corporation and designed by Corgan and Moore, architects of Dallas, presents an effective night exterior. The under marquee tile is easy to keep neat and clean while the stucco and terra cotta front is smart and showmanlike.

HOWEVER, in the midst of history repeating, we designers are presented with an apparently new and different material, the plastic. While there are numerous plastics on the American market today, most of these materials have very much in common with the new adaptations of porcelains and glass. They have strength, permanence of color, and offer flexibility to the architect in designing for the needs of his client today.

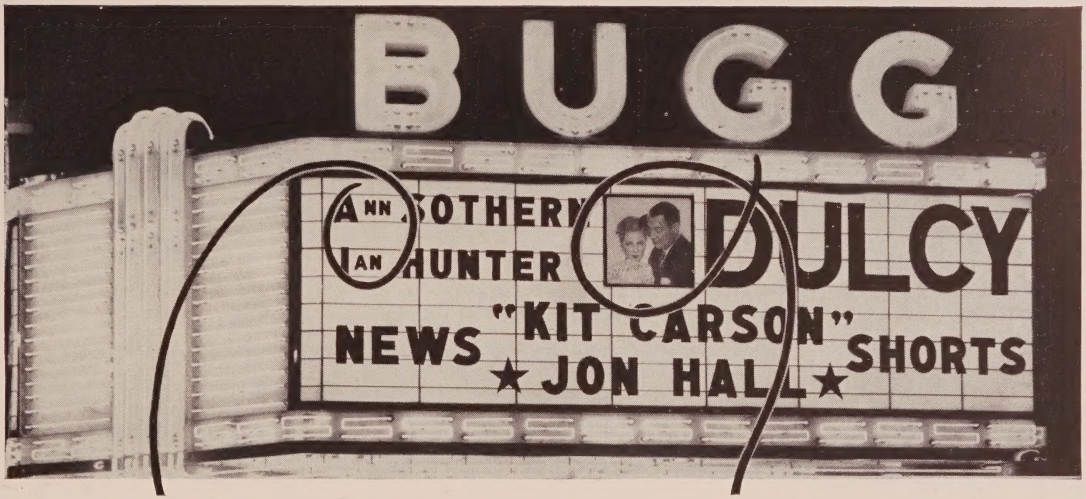
Thus, today, as during the colorful Regency period of English history, the architect is called on to give his client new, colorful, and elegant designs to satisfy the present desire for glistening brilliance in building construction. In order to do this, he must have numerous materials with which he can accomplish his purpose of obtaining durability, strength, permanent color, light, and originality in his building designs.

PORCELAIN ENAMEL, glass, and plastics have all the characteristics mentioned above and have the following things in common:

1. Porcelain enamel is merely powdered glass fused to metal by means of a very intense heat.
2. Glass plastics and metal come from heat and special processes applied to substances of the earth.
3. All three, glass, plastics, and porcelain enamel, can be formed or molded to practically any shape.

We architects feel that they are modern allies combined together to fight against cold, formal, and dingy buildings of an era gone by.

WAGNER
SIGN SERVICE, INC.
SILHOUETTE LETTERS
AND MARQUEE DISPLAY EQUIPMENT



WAGNER SIGN SERVICE, INC.

Note FLEX-WORD UNITS Also EXCLUSIVE With Wagner. Patented.

Note Transparency Frame NEW and EXCLUSIVE With Wagner. Patent Pending.

See the following pages for details about these and four other outstanding items of marquee display equipment.

All Originated by

WAGNER SIGN SERVICE, INC.

218 S. Hoyne Avenue
CHICAGO

123 W. 64th Street
NEW YORK

706 E. Hancock Avenue
DETROIT

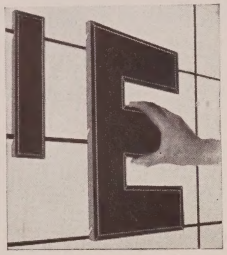
6 Britain Street
TORONTO

EXCLUSIVE
SLOTTED SILHOUETTE LETTERS

WAGNER'S EXCLUSIVE RIGHT TO MANUFACTURE AFFIRMED BY THE HIGHEST COURTS

SAFE — EASY TO CHANGE — EASY TO STORE

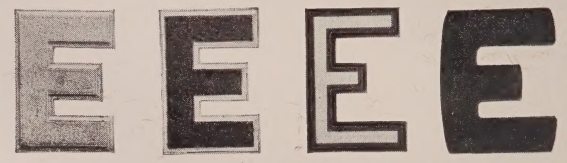
ANY and ALL Sizes of Wagner Letters Can Be Set in the Wagner Multiple Frame.



This illustration shows a 10" letter in place and a 16" letter being set in place. Note the uniform spacing between slots in these two sizes of letters.

All sizes of Wagner Letters are slotted with uniform spacing so that ANY and ALL sizes can be used in the Wagner Multiple Frame.

Wagner Letters Are Made in the Following Types and Sizes in a Wide Variety of Colors



Solid Color Cove
Made in 4", 8", 10", 12", 16", 24" and 30" sizes.

Colored or Aluminum Cove Edge
Made in 4", 8", 10", 12", 16", 24" and 30" sizes.

Duo-Color
Made in 10" and 16" sizes. Others later.

Poster
Made in 8" and 10" sizes.

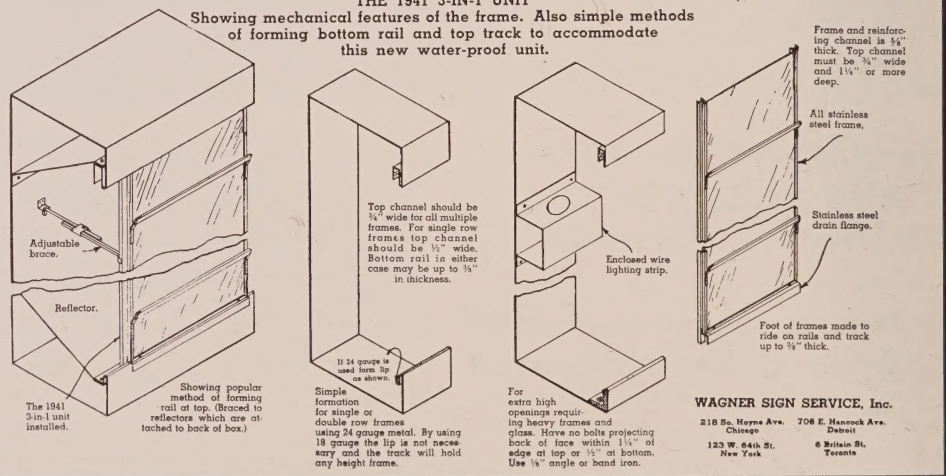
Wagner patents have been upheld against infringement by decision of the U. S. District Court, Northern Dist. of Illinois, Eastern Division, and confirmed by the U. S. Circuit Court of Appeals, Seventh Circuit. The U. S. Supreme Court has made the decision of the Circuit Court of Appeals final by denying a petition for certiorari.

'41 Frame

DRAINS TO THE FACE OF THE SIGN, THEREBY ADDING 100% TO THE LIFE OF ATTRACTION BOARDS

All frames made of stainless steel. In the '41 type 3-in-1 Unit the Frame inserts in a ¾" channel at top and has a drain flange which sets over rail at bottom. This is the best and most practical unit wherever conditions permit its use.

THE 1941 3-IN-1 UNIT
Showing mechanical features of the frame. Also simple methods of forming bottom rail and top track to accommodate this new water-proof unit.



WAGNER SIGN SERVICE, Inc.

218 So. Hoyne Ave. Chicago
706 E. Hancock Ave. Detroit
123 W. 64th St. New York
6 Britain St. Toronto

ALSO AVAILABLE IF DESIRED

'40 Frame

In the '40 type 3-in-1 Unit the Frame clips over rail at top and has a drain flange which sets over rail at bottom.

'39 Frame

In the '39 type 3-in-1 Unit the Frame inserts in a channel at top and bottom. It has no drain flange.

LIGHTING SPECIFICATIONS AND INFORMATION ABOUT THE PROPER HEIGHT OF OPENINGS FOR MASTER MULTIPLE CONSTRUCTION SENT UPON REQUEST

WAGNER SIGN SERVICE, INC.

EASY TO LAY OUT YOUR SIGN COPY WITH WAGNER SCALED LAYOUT STAMPS

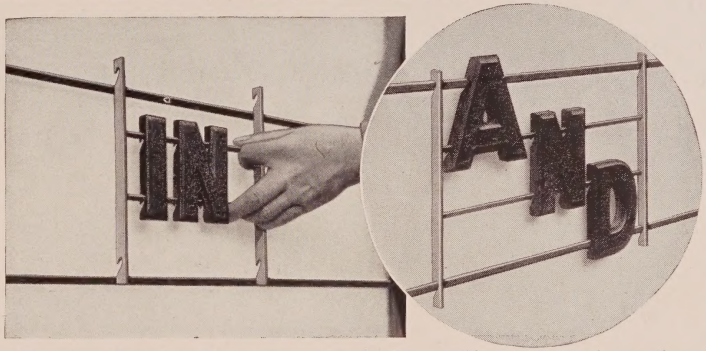
With Wagner's Convenient Layout Set you can lay out your sign copy right in your office, just the way you want it to appear on the marquee. This Layout Set consists of rubber stamps (scaled ¾" to the foot) and ruled sheets on the same scale. The rubber stamps cost only $4.00 per set per size of letter, the ruled sheets are supplied for $1.50 per hundred.

THE DUO-COLOR SILHOUETTE LETTER CREATES MANY NOVEL, ATTENTION-ARRESTING EFFECTS

The Wagner Duo-Color Letter consists of a colored Catlin insert framed in aluminum. Due to the special Wagner construction which permits expansion and contraction of the Catlin the Duo-Color Letter is practically unbreakable under ordinary use. If green fluorescent lighting is used, steady burning, and white incandescent lamps are flashed on and off, it gives the effect alternately of a solid silhouette letter and a letter with neon illuminated center.

THE WAGNER FLEX-WORD UNIT

The Flex-Word Unit consists of miniature frames that mount on the Master Multiple Frame. The illustrations at the right picture a FLEX-WORD Frame (carrying 4" letters) mounted on a Multiple Frame. Wagner 6" and 4" Letters are slotted with a uniform spacing between slots so the FLEX-WORD Frame carries either or both sizes. FLEX-WORD Frames are available in 8", 12", 16", 20" and 24" lengths for either straight or curved attraction boards. An invaluable aid to flexibility in arrangement of copy in the attraction board—saves space—permits better use of space—improves the display value of the marquee — and makes word-plates unnecessary.



Showing how simple and easy it is to use the NEW Wagner FLEX-WORD UNIT. The frame and 4-inch letters can be placed in one operation or the frame can be set in place first and the 4-inch letters placed afterward.

Above illustration shows the flexibility of use of FLEX-WORD UNITS — the 4-inch letters can be staggered in three lines as shown, or two straight lines of 4-inch letters can be used (one line above the other).

NEW and SENSATIONAL

The Wagner Transparency Frames

ADD COLOR AND LIFE TO YOUR ATTRACTION BOARD

(Patent Pending)

The Wagner Transparency Frame which is made to hold 24" x 24" National Screen Accessories transparencies, is slotted to mount on the Wagner Frame the same as Wagner Slotted Letters. Serviced at nominal cost by Wagner. This is the newest thing in show business —for the first time colored illuminated illustrations in the marquee are made possible and practical—through the use of Wagner Transparency Frames.

• • •

WAGNER SIGN SERVICE, INC.

218 S. Hoyne Avenue	123 W. 64th Street	706 E. Hancock Avenue	6 Britain Street
CHICAGO	NEW YORK	DETROIT	TORONTO

Effective Location of the Boxoffice

as the point of sale should be carefully considered in all new and remodeling efforts. On this depends a good share of the inviting front.

BY E. D. STRAIGHT

THE box office to the theatre is like the so-called "dotted line" to business, inasmuch as it operates similarly in the phase of selling. It is the first direct contact with the patron. From the remote contact of the sign and marquee to the immediate location of posters and "stills", the patron, in most cases, is in a reactionary state of mind. Having been exposed to these graphic sales factors, it remains for the box office to clinch the sale through its total impression, and thereby produce a profitable business for the management.

The amount of formality which is relative to the type and size of the house is also a factor in the saleability of the design. In the smaller neighborhood houses, there is considerably greater chance for informality and personal contact than in the larger houses where the sale contact tends to be completely courteous and impersonal. The faster operation in selling an admission ticket in the case of the larger houses located in conjested areas plays an important role insofar as the design and position of the box office is concerned.

THE function of the box office is not only to perform the sale and give information but is, in general, the only personal contact between the customers and the management with the exception of the usher who performs under conditions requiring a purely impersonal service. It then remains for the personality of the theatre and the maximum degree of contact at the box office to give the patron a favorable impression of the management. The box office should present a setting and an impression consistent with the character of the house. It is, to a great extent, indicative of the management which is a vitally important sales factor

From the standpoint of complete efficiency of salesmanship, the customer who has not been sold by the graphic advertising is next a potential sale for the box office. The amount of sales impulse that the box office has may decide the sale. Usually, this is the final approach to the unsold customer. Thus the placing of the box office in such a position as to immediately contact the patron upon his loss of interest in the displays, plus the creating of a want to approach it or establish contact, opens a field of sales that might otherwise unconcernedly saunter off to other enterprises.

THE OSAGE THEATRE, BARTLESVILLE, OKLA., owned by Griffith Amusement Company and designed by Corgan and Moore, architects of Dallas, accents the boxoffice location and focuses attention on it through the ornamental front pavement.

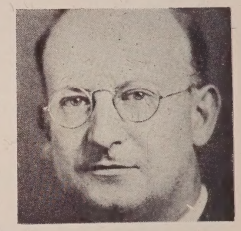
CONSIDERING the box office from the circulation angle, there are several factors that tend to regulate the placing of it in plan. Many times the sacrifice to circulation may limit design and hinder sales promotion. These features must be weighed as to importance and taken into consideration in planning.

Since it is normal that the flow is to the right, a ticket booth on the left side of the entrance would not only interfere with exit flow at a time when both exit and entrant flow is at peak, but would tend to discourage sales due to cross traffic. Therefore, the center and the right side seem to be the two alternatives as far as axial location is concerned. Since it is advantageous to the two lines of flow to have them separated, thereby reducing bumping and friction at the center, the booth may act as a parting element like the park strip in a boulevard, when placed in the center. However, the placing of such a mass or feature directly on axis, in most cases results in symmetricality. This hinders the more modern approach of abstractly balanced design, a newer factor in the advertising value of theatre fronts. It is true that certain existing conditions, especially in remodelings, definitely determine the location of the box office, due in most cases to costs, resulting from existing physical conditions.

THERE are also a number of instances where the width of the property indicates that the logical location shall be on the side. Should the property be too narrow to allow an open and inviting approach to the entry doors, it is only reasonable that the box office be located on the right side. In considering the right side location, it has the advantages of an unsymmetrical element in the front facade, and also that people most naturally move off to the right to stop.

In general, the center location has the advantage in obviousness, which always facilitates the handling of people, plus the natural feeling of traffic division. This accounts probably for the widespread popularity of this position.

(Continued on Page 194)

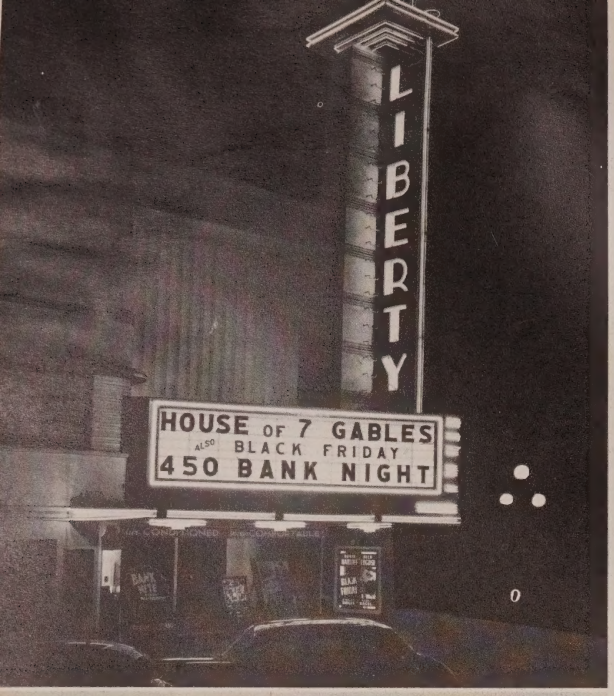


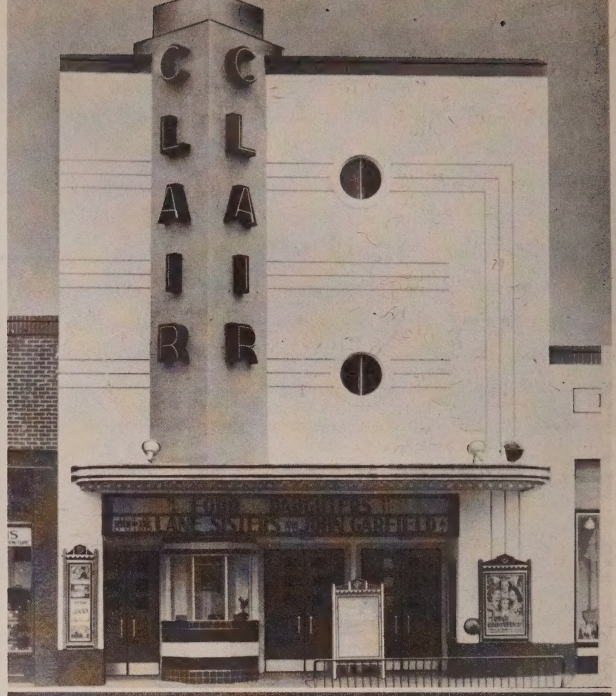
E. D. Straight was born in Lakeview, Mich., and graduated from the Greenville Public School System and the University of Michigan, where, in 1921, he received a B.S.A. from the College of Architecture. He became registered in 1923, worked in various firms and for himself, and finally, in 1931, co-founded the firm of Bennett and Straight. Since that time, he has been the designer of many theatres in the area surrounding Detroit and throughout the state of Michigan.

THEATRE FRONTS *of* TODAY AND TOMORROW

On the pages that follow will be found a carefully selected cross section of modern theatre fronts in various parts of the Americas. In all of them will be noticed a tendency toward devoting more attention, money and effort to get the full attention attracting value and sales appeal from the theatre's "face to the public." Some fronts become one huge sign. Others dominate their entire neighborhood with marquees and upright signs, still others, with changeable letters and ample space, quietly sell with words the attractions within. All are representative of the modern trend and the way show-business has adapted new materials and newly designed supplies. With the public shopping for its entertainment and the decline in the movie "habit," it becomes increasingly necessary to attract and sell the casual passerby.

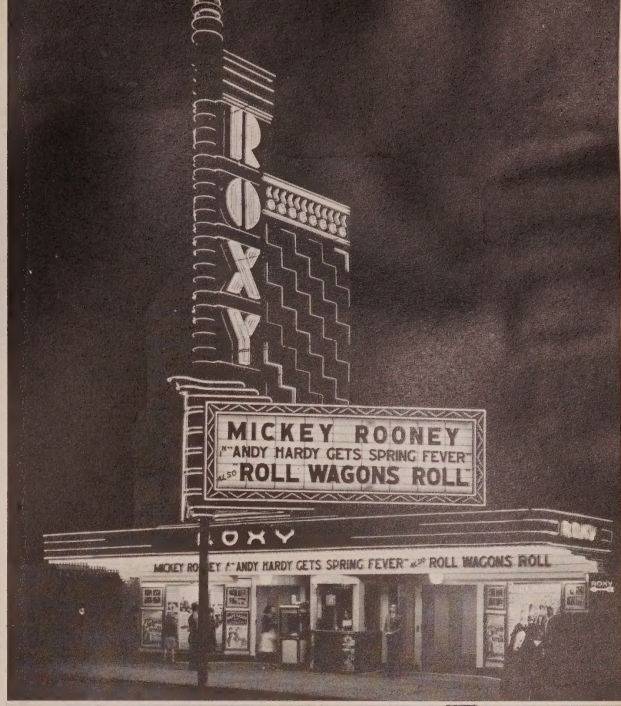
Below: **THE SOUTH AMERICAN WAY.** From Barranquilla, Colombia, S. A. comes this photograph of the new Teatro Murillo, recently constructed. It gives promise of an interesting, modern theatre behind the lobby gates. The sweep and curve of the massive modern design permits the adaptation of the changeable letter marquee into the architectural scheme.





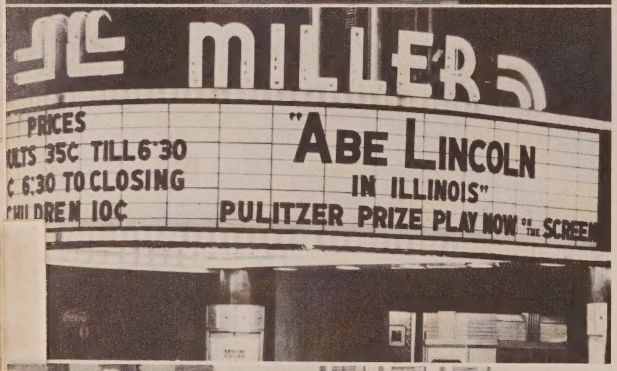
Left: **LIBERTY THEATRE, ELLENSBURG, WASHINGTON.** This concrete front is of an interesting architectural design while the marquee appears to be a unit in itself with the changeable letter signs erected on top. Soffit illumination is different in that individual lighting fixtures around the boxoffice area replace the usual multitude of recessed incandescent lamps. The built-in boxoffice has been interestingly designed into the building wall. Sign and marquee were erected by Valley Neon Service.

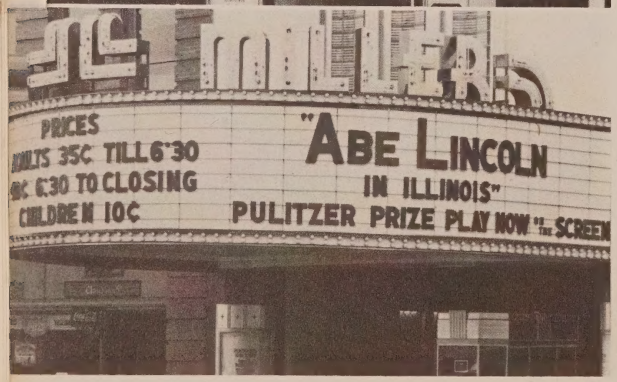
Right: **CLAIR THEATRE, ALBANY, GEORGIA.** This white stucco front is notably prominent in the night view due to the spotlighting from the top of the marquee. The huge pillar which displays the large neon lighted letters of the theatre name carries a straight line effect from pavement to roof, accenting the boxoffice location. Current attractions are billed on the changeable letter sign directly over the entrance. Theatre is owned and operated by C. E. Hilgers and seats 575. Architects Corgan and Moore of Dallas, Texas were the designers.



Left: **SAVOY THEATRE, PHILADELPHIA, PENNSYLVANIA.** This downtown grind house on a main shopping street is sandwiched in between brightly lighted shop windows and must battle for attention. When originally remodeled, its colored porcelain enamel front was too quiet. The addition of a larger marquee with changeable letter signs made it pop out to dominate the entire block. Theatre seats 396 and is operated by Warner Bros. Architect William H. Lee was the designer. Marquee and sign work was erected by Philadelphia Sign Co.

Right: **ROXY THEATRE, YAKIMA, WASHINGTON.** Many owners with telegraph or trolley pole troubles will envy the owner of this theatre and admire his ingenuity and salesmanship with his local authorities. As can be noted, the ugly pole has been incorporated into the marquee and upright sign with a pleasing result. The signwork under the marquee is also striking. Theatre is owned and operated by First National Theatres. Marquee and sign were erected by Valley Neon Service.





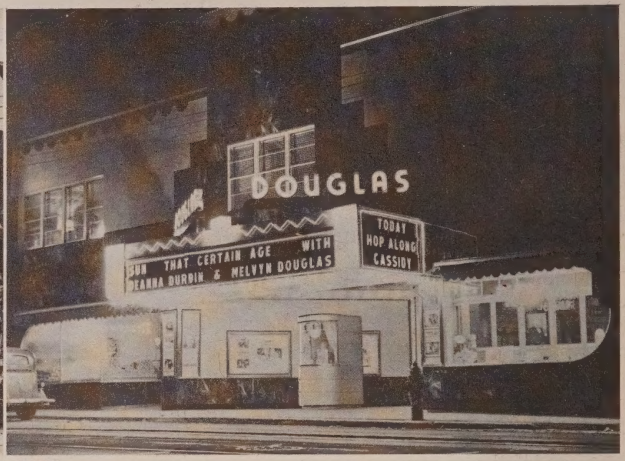
Left: **MILLER THEATRE, AUGUSTA, GEORGIA.** In order to obtain as much attractiveness as a small front would allow, the architect designed a circular marquee to grace this house. The upper facade is concrete, with three vertical columns of glass brick. Illuminated at night, these columns draw attention to the boxoffice with which they are in direct line. The two smaller views call particular attention to the aforementioned circular marquee and the various sizes of silhouette letters used.

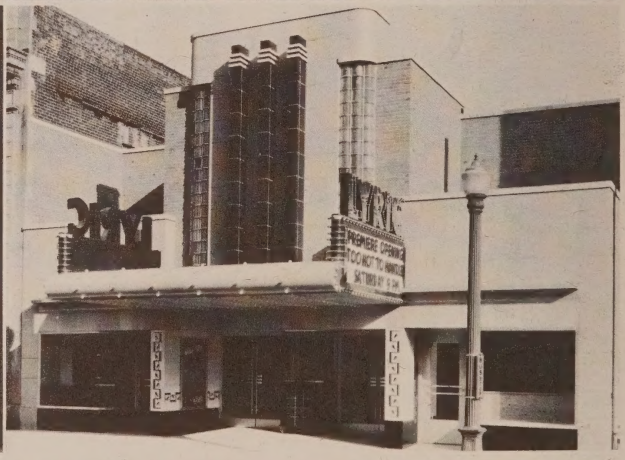
Right: **RIALTO THEATRE, LOWELL, MASSACHUSETTS.** In renovating this front agate structural glass and stainless steel display frames were added as well as the new marquee and sign work. In the views shown, we call particular attention to the one taken after dark. Although the numerous lines of neon tubing draws attention towards the boxoffice, better results might have been gained through the use of additional spots in the soffit. Theatre is owned by Norman G. Glassman. Sign and marquee were erected by University Sign Co.

Left: **WESTMONT THEATRE, COLUMBUS, OHIO.** The treatment given this front is attractive. The lower facade is covered with black Carrara structural glass while the upper portion is faced with terra cotta tiles of a much lighter color. A notable feature is the manner in which the chimney has been designed to appear as if it were merely a column to support the upright sign. The marquee has no sign space but is augmented by a changeable letter sign under the marquee. Theatre was designed and constructed by F & Y Building Service.

Right: **TROY THEATRE, TROY, NEW YORK.** The problem of a very narrow entrance was overcome by architects Blatner and van der Bogert, Albany, N. Y., by extending the marquee across the entire width of the theatre property which included a store front adjacent to the entrance. A sculptural plaque of cast stone with a limestone finish for the upper facade depicts a theatrical motif. Horizontal louvres flanking this are of painted metal in varied colors. The store name directly under the marquee is in Wagner Railock letters.

Above: **CLEVE THEATRE, COLUMBUS, OHIO.** The center portion of the upper facade is a series of amber Belgian glass brick columns. The illumination behind these columns is on a flasher regulated to give the appearance of a waterfall in action. The rest of the facade is of gray face brick and canary terra cotta tiles. The marquee has been designed so that the center is open and does not detract from the effect of the waterfall. Theatre is owned by C. A. McDonald and was designed and constructed by F & Y Building Service.

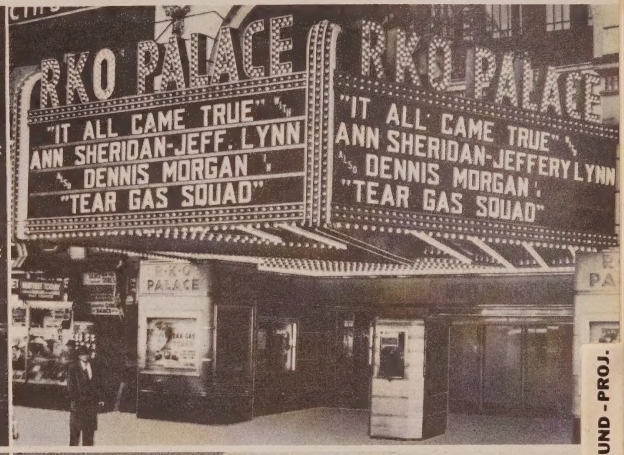


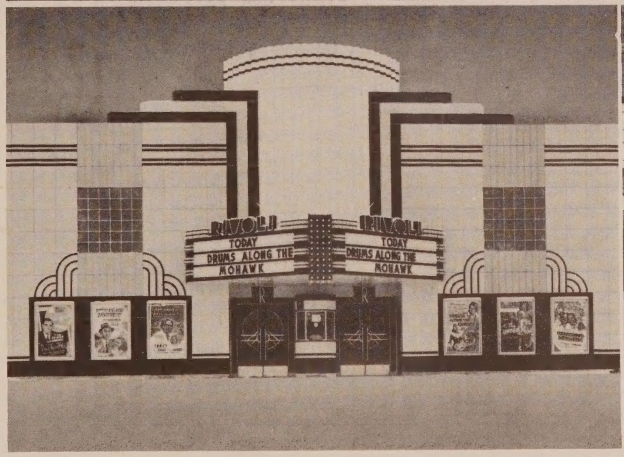


Upper: **DOUGLAS THEATRE, RACINE, WISCONSIN.** Of particular interest is this front, entirely faced with Vitrolite structural glass. The upper portion is yellow, while the lower portion is royal blue agate. The architectural design is in good taste and was excellently handled. More attention however could have been paid to the marquee and signwork erected by R. H. Boehm Co.

Lower: **LYRIC THEATRE, LANCASTER, OHIO.** This front is a combination of face brick and terra cotta. Interesting are the columns of curved rose colored Belgian glass brick on each side of the tower and illuminated from the rear at night. The marquee is plain but adequately serves its purpose. Theatre seats 800 and is owned by the Alfred Estate. Builders and designers were F & Y Building Service.

Above: **KENTUCKY THEATRE, LATONIA, KENTUCKY.** Excellent handling of the design did much to place this house above the average of the neighborhood "movie." Face brick and terra cotta in turquoise blue and yellow were the materials used for facing. The two theatre name signs are particularly interesting. Note the stepped soffit of the marquee. Theatre is owned and operated by Louis Wiethe and seats 900. Sign and marquee were erected by Lackner Sign Co.

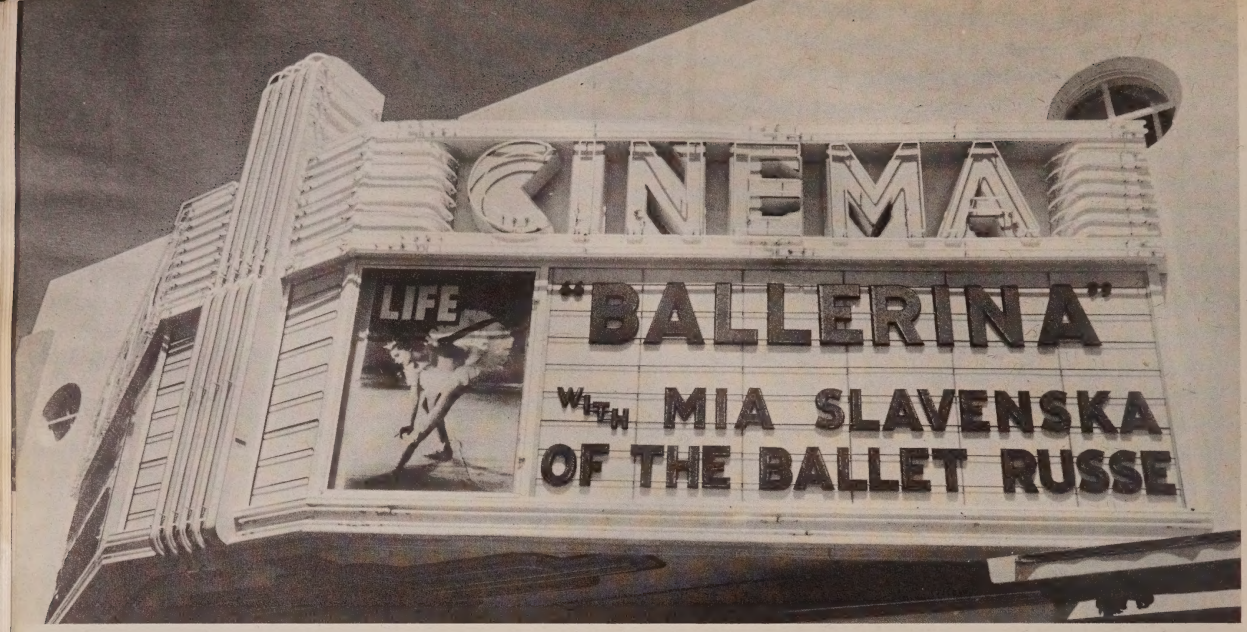




Above: **RKO PALACE THEATRE, NEW YORK, NEW YORK.** Resplendent, especially at night, is the huge marquee used to sell the show at this New York City house. Massiveness seems to be the keynote here with the assistance of as much illumination as possible.

Lower Left: **RIVOLI THEATRE, ALTOONA, PENNSYLVANIA.** The entire front has been faced with porcelain enamel in varied colors for contrast. Poster frames set into a dark field of color are of aluminum. The entire front was installed by Artkraft Sign Co.

Lower Right: **RKO PALACE, NEW YORK CITY, NEW YORK.** This view shows two interesting features of the house. The changeable silhouette letter sign directly over the doorway and the Herculite structural glass doors, an innovation in the glass industry.



Above: **CINEMA THEATRE, LOS ANGELES, CALIFORNIA.** Here is presented a new idea in marquee use and one that merits consideration for possible improvement or adaptation. As 40" x 60" blow-ups are now an inexpensive accessory, procurable from most exchanges or advertising services, their use in the form of star heads, short subject special attraction, etc. can be worked effectively into the front. Proper lighting can make this most effective after dark. Theatre shown was designed by Los Angeles architect S. Charles Lee.

. . . Structural Glass-Porcelain Enamel, both offer possibilities

Left: **FLORIDA THEATRE, FORT LAUDERDALE, FLORIDA.** Unusual front treatment is provided in the design of this house. Dark portion in the center is tropic green Vitrolite. The marquee and upright sign are both used to identify the theatre, and no space has been provided on the marquee for changeable signs. Roy A. Benjamin, Jacksonville, Florida, was the architect.

Upper Center: **TIMES THEATRE, TOLEDO, OHIO.** The color scheme of this front was created through the use of black and ivory Carrara structural glass. Only signwork is the marquee, which serves to call attention to the theatre name. Note the treatment of the center portion of the facade where four lines of neon tubing help carry a direct line down to the theatre entrance and boxoffice.

Lower Center: **EMERY THEATRE, CINCINNATI, OHIO.** A neat, clean looking front was the result obtained through use of Davidson Porcelain Enamel in varied colors to form an intricate pattern. The signwork is not massive but fits perfectly in proportion to the size of the house. Note that the towers on each side have a trim of neon tubing near the top.

Right: **UPTOWN THEATRE, KALAMAZOO, MICHIGAN.** Porcelain Enamel was again used here as the facade covering. The combination of vertical and horizontal patterns provides an interesting design that is simple but attractive. The signwork appears to be well constructed and is of a design in keeping with the overall architectural plan.

ADLER

6" - 8" - 10" - 12" - 16" - 24"

For Interchangeable Use of All Sizes from 8" to 24"

Exclusive "THIRD DIMENSION" MULTIPLE-SIZE LETTERS WITH *"Remova-Panel"* OR STATIONARY GLASS MULTI-DECKER *Locked-in-Line* GLASS-IN-FRAME UNITS

ADLER "3RD DIMENSION" FOR MODERN DISPLAY LETTERS ALL SIZES 8" TO 24" INTER-CHANGEABLE

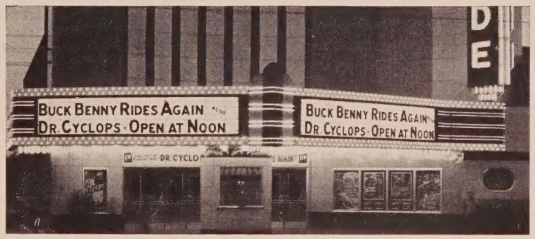
ADLER *Exclusive* *"Remova-Panel"* EQUIPMENT

Saves Its Cost in Sign Maintenance
Prevents Glass Breakage — Safer to Use

The **OLD**

The **NEW**

The greatest advance in changeable signs since ADLER originated REMOVABLE SUPPORTING FRAMES. Simply swing out or remove entirely, the small, lightweight "Remova-Panel", approximately 7" x 24", instead of lifting out a large, heavy, glass-in-frame unit. "Remova-Panel" units alternate with stationary glass units in the opening, as furnished. Every panel between all horizontal bars in "Remova-Panel" units, is a removable panel.



12" and 16" ADLER "THIRD DIMENSION" LETTERS, used interchangeably in openings, and "Remova-Panel" GLASS-IN-FRAME UNITS.

Never Before So Many Big Advantages

"THIRD DIMENSION" OR LUG TYPE LETTERS IN 6"-8"-10"-12"-16"-24" sizes, the "THIRD DIMENSION" LETTERS for interchangeable use of all sizes, from 8" to 24".

"REMOVA-PANEL" EQUIPMENT—new, exclusive—economical.

MULTI-DECKER FRAMES FOR INTERCHANGEABLE USE OF 8"-10"-12"-16"-24" "THIRD DIMENSION" LETTERS.

Locked-in-Line FRAMES—strong, rigid, skyscraper-like construction—light-tight joints. Every other unit removable.

GLASS-IN-FRAME CONSTRUCTION—we furnish the glass and glaze frames before shipment.

FRAMES SET DIRECTLY IN GROOVES OF SIGN—no changes required—no clips to scratch the surface.

POPULAR 10"-16"-24" COMBINATION—letters line up perfectly—use larger letters as Capitals or for STARS and TITLES.

TOUGH, BAKED FINISH—standard black face and silver bevels. Solid black or other standard colors also furnished.

7/8" WIDE GROOVE CONSTRUCTION—recommended, but we also furnish frames to fit existing grooves as narrow as 1/4" wide.

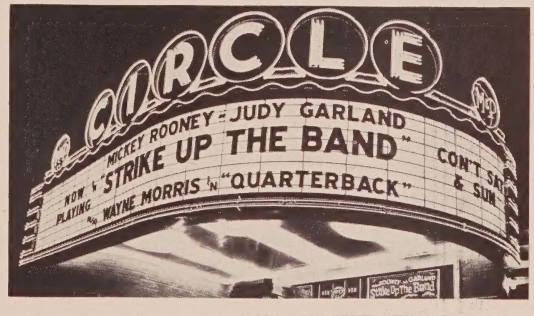
CURVED MARQUEE OR MITRED FRAMES—furnished.

WONDERFUL FOR REPLACING OLD STYLE LETTERS. We furnish frames to fit any existing grooves, down to 1/4" wide.

APPROVED BY UNDERWRITERS' LABORATORIES, INC.—for any opening up to 9 ft. (108") in height and any length whatever.

LETTERS GUARANTEED AGAINST BREAKAGE.

WRITE FOR COMPLETE INFORMATION—No obligation.



A Paramount curved marquee, with 10" & 16" ADLER "THIRD DIMENSION" LETTERS used interchangeably, in *Locked-in-Line*, GLASS-IN-FRAME UNITS.

LISTED BY UNDERWRITERS' LABORATORIES, INC.

United States Patents		Canadian Patent
No. 2156257	No. 2155904	No. 369858
No. 2144954	No. 2113285	
No. 2163298	No. 1830414	England Patent
No. 2038978	No. 1989855	No. 442512

And other Patents Pending

ADLER SILHOUETTE LETTER CO.

2909 S. INDIANA AVENUE, CHICAGO — New York Office: 33 WEST 60th STREET

CHICAGO — NEW YORK — TORONTO, CANADA — LONDON, ENGLAND

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ADLER SILHOUETTE LETTER CO.

SOUND - PROJ.

ALUMILITED SEALUXE ALUMILITED

Poster and Display Frames

Extruded Aluminum

"The most beautiful frames in America"

NEW STANDARDS IN BEAUTY, DURABILITY, ECONOMY

UNIVERSAL BUILDING PRODUCTS CORP.

Constructed of Strong, Heavy Extruded Aluminum Shapes

Every part of a **SEALUXE Frame** is strong, heavy seamless extruded aluminum shapes. Strength without excessive weight . . . trim, precise lines.

Rigid Construction That Requires No Maintenance

Out of our many years' experience building windows of extruded aluminum shapes we perfected a method of fabrication for **SEALUXE Frames** that is rigid and durable. Corners are accurately mitered, structurally joined and mechanically locked . . . hairline joints.

No Wood to Rot Out, Become Wobbly or Get Out of Shape

With the exception of the plywood panel there is no wood in a **SEALUXE Frame** to rot, become wobbly or get out of shape.

Alumilited . . . Never Tarnish . . . Require No Polishing

The **alumilite finish** which is applied in our own plant gives a surface hardness greater than chromium. Rich, satiny smooth finish that is resistant to tarnish, scratches and weather.

All Types and Sizes, and Combinations— (Groups, A-B-C, D and E)

SEALUXE Frames are available in both wall and easel types, with hinged doors or with slip-in panels, with and without date strips, with and without concealed lighting fixtures. Standard sizes range from 3 x 14 inches to 40 x 80 inches. Special sizes, special combinations, special designs, special decorations built to order.

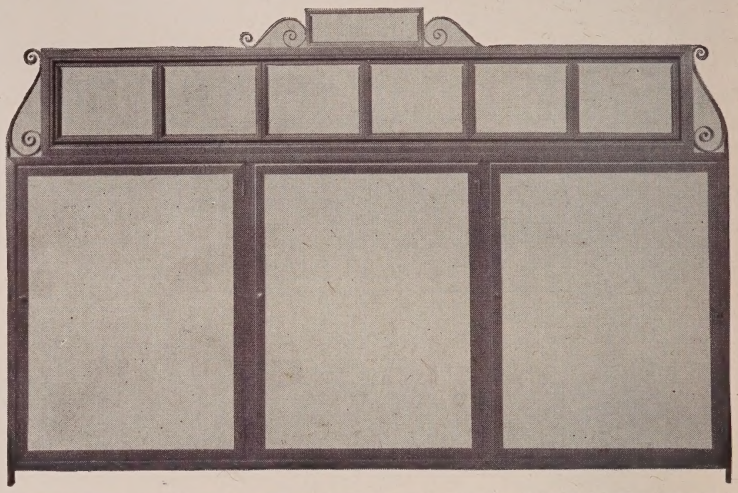
Low in Cost

The reason that **SEALUXE Frames** have become so popular in so short a time is because they are superior in so many ways, have numerous improvements and advantages, yet are low in cost.

SERVING THE NATION
NATIONAL THEATRE SUPPLY COMPANY
SOLD • SERVICED • GUARANTEED

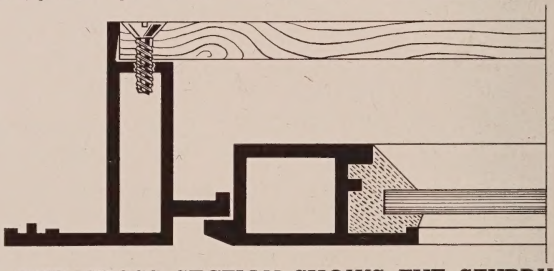
Displays of SEALUXE Poster and Display Frames and other theatre fixtures can be seen in National Theatre Supply Co. offices.

EXCLUSIVE DISTRIBUTORS



PROMINENT THEATRES FROM COAST TO COAST HAVE THE MODERN BEAUTY OF SEALUXE POSTER AND DISPLAY FRAMES ON THE JOB

The **SEALUXE Frame** shown in the illustration shows how combinations can be worked out. This easel frame is composed of three 1-poster size frames, 6 photographic print frames and a date frame—plus scroll decorations. All the frames and the easel being made of trim, precise, rigid extruded aluminum shapes—and **alumilited.**



THIS CROSS SECTION SHOWS THE STURDY CONSTRUCTION OF A SEALUXE FRAME

This is a full size cross section detail of a Group A **SEALUXE Wall Frame** with hinged door designed for installation into a recess in a wall. The solid black sections are the extruded aluminum shapes out of which both the sash and the door sections of a frame are constructed. Extruded aluminum shapes are used in all **SEALUXE Frames.** The only wood in any **SEALUXE Frame** is the plywood panel on the back.

UNIVERSAL BUILDING PRODUCTS CORPORATION

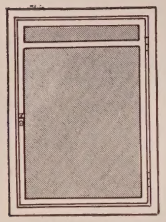
2227 Cedar Springs, Dallas, Texas

Manufacturers of SEALUXE Products—Windows . . . Poster and Display Frames . . . No-Draft Speaking Tubes . . . Ticket Office Shutters . . . Ticket Booths . . . Ticket Boxes . . . Entrance Doors . . . Store Fronts . . . Elevator Enclosures . . . Newel Posts . . . Railings . . . Light Fixtures and Reflectors . . . Marquees . . . Grilles . . . Mirror Frames . . . Push and Pull Bars . . . Thresholds . . . Kick Plates.

SERVICE FOR ARCHITECTS—Any architect upon request will promptly receive complete drafting room details on any SEALUXE Product. A department of design to assist with plans and specifications.

ALUMILITED SEALUXE ALUMILITED

Poster and Display Frames



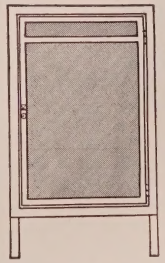
GROUP A
Wall Frame
Hinged Door
With Date Space

Group A

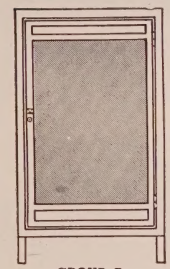
Wall and Easel Frames with glazed hinged doors, for exterior and interior use. With and without date space.
Standard Sizes (figures give poster sizes—overall sizes of frames are larger.)

26″ x 40″	30″ x 40″
40″ x 60″	40″ x 80″

Special sizes, designs and combinations built to order. The frame sash, the door sash, and the easel are made of extruded aluminum shapes. The only wood in these frames being the plywood panel on the back.
Wall frames require a 1½″ recess.



GROUP A
Easel Frame
Hinged Door
With Date Space



GROUP B
Illuminated
Easel Type
No Date Space

Group B

Concealed fluorescent lighting fixtures at top and bottom (lamps not included). No date space. Wall and Easel types. Glazed hinged doors. For exterior and interior use. Standard Sizes (figures give poster sizes — overall sizes of frames are larger).

26″ x 40″	30″ x 40″	40″ x 60″	40″ x 80″

Special sizes, designs and combinations built to order. Plywood panel back.
Wall frames in this group require a 4″ recess.

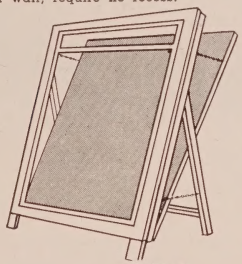
Group C

Sliding panel types glazed but without doors. Wall type vertical or horizontal slide optional. Easel type has removable panel, as shown in sketch. With and without date space. For exterior and interior use. Standard sizes (figures give poster sizes—overall sizes of frames are larger).

26″ x 40″	30″ x 40″	40″ x 60″	40″ x 80″

Special sizes, designs and combinations built to order. Made of strong, heavy extruded aluminum shapes. Wall frames in this group mounted on face of wall, require no recess.

GROUP E
Wall Frame
Stationary Panel



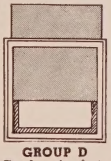
GROUP C
Easel Frame
Showing Operation of
Removable Panel

Group E

Both wall and easel types. Same as Group C Frames, except without glass; the panel is stationary, finished with two coats of special paint. Standard sizes (figures give poster sizes, overall sizes of frames are larger).

26″ x 40″	30″ x 40″
40″ x 60″	40″ x 80″

Special sizes and combinations built to order.



GROUP D
Card raised to show how frame is attached to wall.

Group D

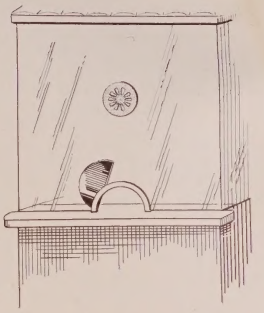
Wall and easel types for slip-in cards and photographs. Glass can be used on these frames. It slides into the frames, but is not waterproof. Interior use only. Vertical or horizontal slide optional. Standard Sizes—wall type (figures give card and poster sizes—overall sizes of frames are larger).

14″ x 3″	14″ x 11″	28″ x 22″	EASEL TYPE
14″ x 4″	17″ x 14″	30″ x 40″	30″ x 40″
10″ x 8″	22″ x 14″	40″ x 60″	40″ x 60″
14″ x 8″	36″ x 14″	40″ x 80″	40″ x 80″

Wall types easily attached with screws through back edge of frame. Easel Clips are available to hold frames up to 22″ x 28″ size on tables, desks or windows. Curved Head Frames and Doors available on special order.

No-Draft Speaking Tube

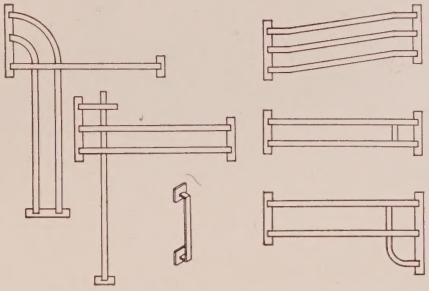
Type "A" Speaking Tube has movable shutter which of course can be used to close out the weather. Precision built of aluminum.
Type "B" Speaking Tube has no movable shutter. Otherwise same as **Type "A".**



Box Office Shutters

Custom Built

Sketch shows **Type "B" Shutter** open. The **Type "A"** is rectangular in shape. Either type can be made in required size. Both are built with pivot hinge and keyed lock. Fitted with waterproof felt cushion on bottom edge which serves as a positive weather seal.

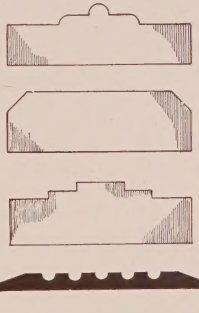


Push and Pull Bars

Shown are just a few standard types. Our staff of designers can assist in working out any type needed, in either aluminum or bronze.

Kick Plates

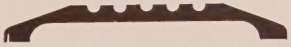
Rolled aluminum or bronze in various finishes. Can be furnished in any length and width, and in any design. Square edge or beveled edge as desired.



Thresholds

Aluminum or Bronze

Can be supplied with smooth or corrugated surface in standard widths, and lengths needed.



Displays of SEALUXE Poster and Display Frames and other theatre fixtures can be seen in National Theatre Supply Co. offices.

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EXCLUSIVE DISTRIBUTORS

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SERVICE FOR ARCHITECTS—Any architect upon request will promptly receive complete drafting room details on any SEALUXE Product. A department of design to assist with plans and specifications.

UNIVERSAL BUILDING PRODUCTS CORP.

SOUND-PROJ.

Continued from Page 182

The distance in from the street and the amount of space available for the lobby sometimes governs the placing of the box office on the building line. The outside booth has such considerations as the inconvenience of procuring tickets in the cold, thus causing a somewhat hurried and uncomfortable procedure for both ticket girl and patron. Also, the ticket office on the street has a more commercial appearance. There is less feeling of personal contact when the ticket girl is walled up behind a structure exposed to outside elements. To establish a closer contact between patron and ticket girl, the use of a low open counter in the lobby such as used in the teller's window of the newer banks is quite a free and friendly solution. This, of course, necessitates placing the box office in an open lobby so that it can be clearly and quickly seen. In this case, clear glass outer doors revealing completely the outer lobby and the carrying of the lines of interest from the outside directly into the lobby must be used so that the ticket box is easily discernible. The impulse to enter, created by the carrying of lines of interest into the lobby plus the more comfortable place to purchase the ticket would tend, from the psychological point of view, to bring the patron in with little chance to retrace his steps.

WE have considered the box office from the sales function angle and from its site in the plan, two factors which govern the design with little compromise. There remains the architectural treatment that is the essence of clean-cut design giving accent, unity, and beauty to the box office as an integral part of an interesting and efficient lobby or front as the case may be.

The mass of the ticket box in itself is small enough in proportions that it can be treated as a decorative element and also in some cases as an integral part of the structural mass, such as using it under the marquee as a base or support to the overhanging marquee and perhaps the sign. By treating it as a working unit in the structural feeling of the front, the unity of design is established without sacrificing the accent and prominence necessary for good sales.

Many otherwise good designs resort merely to applied decoration on the box office. This gives it prominence but causes it to lose unity and character. It should not be a gilded bird cage that stands out of the facade but should be a subtle point at which the eye will naturally come to rest.

The box office solution that results in a well-balanced compromise, with little sacrifice in requirements of sales function or circulation, and that also has clean-cut design revealing no concessions or weaknesses due to structural or planning necessities will be an asset not only to the showman and a credit to the designer but a pleasure to the patron as well, everyone will surely admit.

Selling Power is Showmanship

Construction, display, advertising and economy in sign and marquee designing.

BY VICTOR A. RIGAUMONT

DO you remember how this big sign on Times Square clicked in 1925?

It clicked so loud we could hear the bulbs singing across the Square in our office in the Loew's State building. This signboard is still used to advertise outstanding pictures, and it is interesting to note that, to this day, the designs follow, as a rule, the original "Big Parade" idea.

Why? Because it was plain, impressive, demanding of attention—and it got it with lots to spare, regardless of imitative competitors. It served a definite purpose.

HOWEVER, this article does not intend to deal with Broadway and Times Square, where intense rivalry demands the most sensational, novel types of advertising.

This article deals with the average small American town, the business center of the county. To it come workers from the fields, factories, and shops in the vicinity to purchase their entertainment from perhaps two or more Main Street theatres.

Neon Tube Boulevard, let us call it.

The theatres on Neon Tube Boulevard often combine red tubes of vertical or horizontal signs with fronts of past vintage. Not enough exhibitors realize that it is senseless to design a fine marquee with lots of flash and light unless the front, the ticket box, and the display frames are also new.

Of course, at night what is wanted is a burst of light—then plenty of color, neon tubes, and lamps to hold attention—then the product announcement to sell the show. All of these factors go to make up selling power.

The various ways and means of design are the astonishing part of a good sign manufacturer's art. But, as these manufacturers are primarily interested in signs and inventing new devices, tubes, colors, and letters to magnetize the public, it is sometimes difficult to hold them to a true course, which means the sympathetic relation of sign-work and architecture.

IT is the function of the theatre architect to correlate the business of construction, display, advertising, and economy of operation. It must be sharply remembered that a marquee of intense brilliance is also extremely expensive to operate—especially in a small town.

And so a marquee must first be designed which will be conspicuous in the daytime, with no lights burning. This demands color, bold names, and visible attraction board letters on white glass. Economy of upkeep demands enamel steel, which costs little more than a paint job which will become shabby and have to be renewed. Then the marquee must be designed for evening illumination without burning a hole in the books of the Chancellor of the Exchequer.

The popular 10-foot off the sidewalk changeable letter board, with its extensive surfaces of glass and variable size letters and its

Victor A. Rigaumont was born June 8, 1889, in New York City, and had his education at the College Guisard, Colombes, France; Saham Toney College, Norfolk, England; Carnegie Institute of Technology, Pittsburgh; and Atelier Umdenstock, Paris. He is a registered architect in New York, Pennsylvania, Ohio, New Jersey, and with the National Council Architectural Board. Established since 1916, he has designed theatres for companies too numerous to mention, and has received first, second, and third medals from the Society of Beaux Arts of America. Among the companies for which he has designed theatres are Warner Brothers theatres, Harris Amusement Co., Shea Circuit, Inc., Schine Circuit, Inc., Smalley's Theatres, Inc., and Skirball Brothers.

• FORMICA *for Theater Walls, Doors, Paneling..*

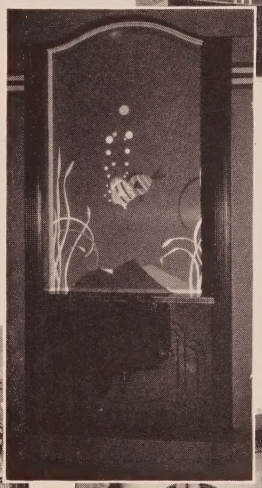
THEATERS are made more attractive by the use of Formica decorative sheets for surfaces. This plastic material is very hard and durable, easily cleaned and maintained, and extremely colorful and decorative.

There are more than 70 colors and inlays in metal and color, making the widest variety of decoration possible. Some exceedingly theatrical effects have been attained by leading theater architects.

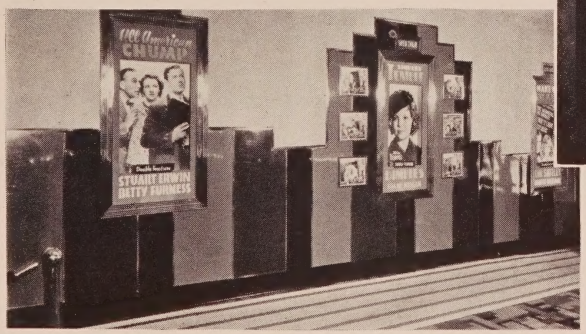
Formica is not brittle and will not chip or crack. It is inert chemically and will not spot or stain with ordinary cleaning solutions. It can be washed with soap and water or cleaned with alcohol or other solvents if that is necessary.

Once Formica has been installed, the surfaces do not need to be refinished and maintenance is practically nothing for many years. In hundreds of fine new and remodeled houses Formica has been used for many purposes.

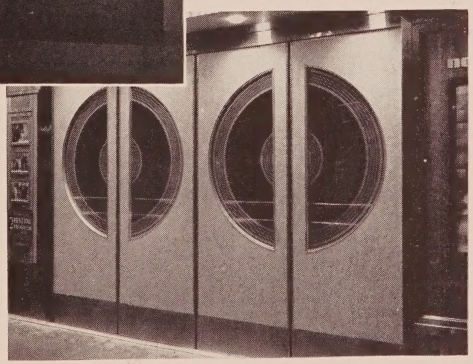
● *Red Formica box office paneling with black base and silver inlays. Grand Theater, Cincinnati, Ohio.*



● *Formica fluorescent drinking fountain panel in the Farragut Theater, Brooklyn, N. Y. John & Drew Eberson, Architects.*



● *Formica lobby wall paneling is one of the popular uses of Formica in theatres.*



● *Formica doors of many colors and with elaborate inlays are available for theatre entrances.*

The Formica Insulation Company
4674 Spring Grove Avenue, Cincinnati, Ohio

FORMICA
FOR BUILDING PURPOSES

THE FORMICA INSULATION CO.

SOUND - PROJ.

NO LADDERS are necessary to service this marquee of the Harris-Manos Theatre, Jeannette, Pa. According to Mr. Rigaumont's design a specially prepared room behind the sign board and accessible from the second floor of the theatre permits removable letter storage and sign servicing from within.

high consumption of numerous 60-watt bulbs, is fast joining the ranks of the disappearing vertical signs in the small towns. These large low face boards are being replaced by smaller double-faced hanging changeable letter boxes closer to the sidewalk pedestrians, and the marquee faces are being designed with multi-colored and patterned tubes, with running borders and the theatre name.

However, if it is possible to place the changeable letter boards much higher than usual, so as to get over the parked cars, then these attraction boards are worth their weight in gold, because they can be seen from a distance and read because of larger type and capitals with intense light behind them, and with very few competing tube lights or flashers to disturb the eye.

THE marquee of the Harris-Manos Theatre, Jeannette, Pa., is a fine example of 100 per cent efficiency. Situated in a town of 20,000 people, with two other theatres, the Manos has the problem of advertising a show a block away over the tops of parked automobiles and street cars, so that drivers and pedestrians across the narrow street, on the other busy sidewalk, can see what show the Manos is playing. Consequently, the changeable letter board is much higher than usual, and the problem of serviceing the letters is created. The erection of a V-shaped room behind the sign board, on top of the roof of the marquee, solved the problem. In this room, accessible from the second floor, the letters are kept in racks, and these are passed under the sign board through a slot in exactly the rotation in which they are to be used. The operator walks on the roof of the marquee in front of the sign board, removes the old script, slips it through the slot, picks up and places the new script. One man, one simple operation, no ladders, no broken tubes, no accidents, no expenses.

Therefore, when we speak of selling power, we also mean power of utility and economy.

This design, developed by this writer in collaboration with others, has the potentialities to become as popular as the V-shaped marquee now in vogue, and originally designed by this writer 18 years ago.

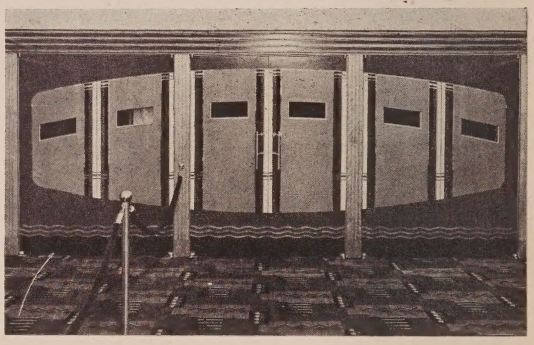
DISPLAY frames, ticket offices, entrance doors, and sidewalk designs belong to the same family as the marquee, with a mutual goal of conservatively modern and attractive showmanship. These are all essentials to sincerely progressive theatre-owners. Certainly, there is beauty in a well-illuminated and colorful marquee ceiling, metal display frames, structural glass or polished stone walls, doors of original design with chrome or alumilite hardware, and bright rubber flooring, all focusing attention upon the inevitable and very important boxoffice.

There are no iron clad rules for marquee designing, and stock marquees are undesirable. Advertising is an expression which requires individuality, inventiveness, and originality. Marquee design demands the same—with each case to be studied and reviewed on its own merits, conditions, and functions. What is good for one theatre may not be good for another. What is more monotonous than to pass through several adjoining towns and see the advertising displays executed in an identical fashion?

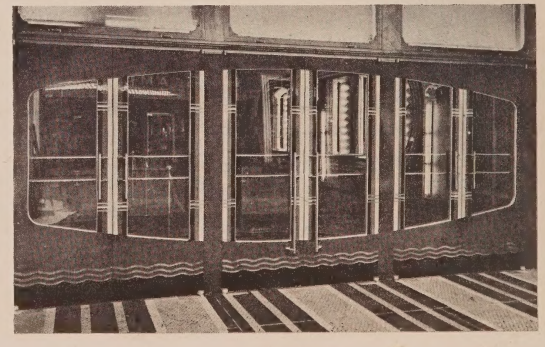
Although the endeavor to attract customers begins at the marquee and front doors, today's progressive exhibitors carry on through these doors to the seats, decorations, projection, acoustics, air conditioning, and dozens of carefully studied and appointed items designed for the complete comfort of their patrons.

Certainly expressive signs and marquees and fronts are conducive to attracting the patron, but these are only steps to the real fundamental—the main idea:

Selling Power, which is Showmanship.

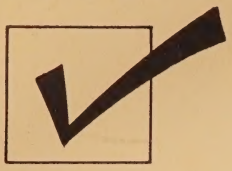


EFFECTIVE DOORS of inlaid Formica grace the inner lobby and outer lobby of the Grand Theatre, Cincinnati, Ohio. John Eberson, architect, of New York.



A SERVICE TO YOU that we are glad to render! TRY IT!

MAY WE BE OF HELP?



Check the items for which you are in the market and on which you need additional information . . . we will get it into your hands quickly and completely from reliable dealers and manufacturers!

FILL IN : FOLD : SEAL : AND MAIL! NO POSTAGE : NO COST : NO OBLIGATION!

- ☐ Acoustical Treatment
- ☐ Acoustical Materials
- ☐ Acoustical Service
- ☐ Admission Signs
- ☐ Air Conditioning System
- ☐ Air Conditioning Blowers
- ☐ Air Conditioning Distributors
- ☐ Air Conditioning Filters
- ☐ Amplifiers
- ☐ Amplifier Tubes
- ☐ Architect

- ☐ Batteries
- ☐ Bookkeeping System
- ☐ Booth Supplies
- ☐ Boxoffice
- ☐ Boxoffice Equipment
- ☐ Business Boosters
- ☐ Bathroom Accessories
- ☐ Building Materials
- ☐ Building Service

- ☐ Cabinets
- ☐ Cans
- ☐ Carbon Adapters
- ☐ Carbons
- ☐ Carpets
- ☐ Chair Accessories
- ☐ Chairs
- ☐ Changeable Letters
- ☐ Changeovers
- ☐ Coin Changers
- ☐ Color Wheels
- ☐ Condensers
- ☐ Converters
- ☐ Curtains
- ☐ Curtain Controls
- ☐ Curtain Track
- ☐ Cycloramas

- ☐ Decoration
- ☐ Deodorants
- ☐ Desks
- ☐ Dimmers
- ☐ Door Hardware
- ☐ Draperies
- ☐ Drapery Materials
- ☐ Drinking Cups
- ☐ Drinking Fountains

- ☐ Effect Machine
- ☐ Exit Signs

- ☐ Fans
- ☐ Film Cases
- ☐ Fire Extinguishers
- ☐ Fire Hose
- ☐ Fire Shutters
- ☐ Flashlights
- ☐ Fluorescent Paint
- ☐ Floodlights

- ☐ Floor Lamps
- ☐ Flooring Materials
- ☐ Fluorescent Lighting
- ☐ Footlights
- ☐ Frames
- ☐ Front Re-building
- ☐ Furniture
- ☐ Flooring

- ☐ Generators
- ☐ Glass Sign Letters
- ☐ Glass Brick

- ☐ Hand Rails
- ☐ Hand Dryers
- ☐ Hardware
- ☐ Hearing Aids
- ☐ Heating Equipment
- ☐ Heating Systems

- ☐ Interior Remodeling
- ☐ Interior Redecorating
- ☐ Insulation

- ☐ Janitor Supplies

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- ☐ Kleig Lights

- ☐ Linoleum
- ☐ Ladders
- ☐ Lamps
- ☐ Lenses
- ☐ Lighting Fixtures
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- ☐ Lobby Hardware
- ☐ Lobby Redecorating
- ☐ Lobby and Lounge Furniture

- ☐ Marquee
- ☐ Mirrors
- ☐ Murals

- ☐ Outdoor Signs
- ☐ Ozite Carpet Padding

- ☐ Paints
- ☐ Painting
- ☐ Panel Board
- ☐ Pedestals
- ☐ Photo Electric Cells
- ☐ Popcorn Machines
- ☐ Porcelain Enamel Front
- ☐ Poster Frames
- ☐ Premiums
- ☐ Plumbing Fixtures
- ☐ Projection Lamps
- ☐ Projectors

- ☐ Rectifiers
- ☐ Rectifying Tubes
- ☐ Reels
- ☐ Reflectors
- ☐ Refrigerating Equipment
- ☐ Rewinders
- ☐ Rewind Tables
- ☐ Roofing Material
- ☐ Rubber Mats

- ☐ Safe
- ☐ Screen
- ☐ Seats
- ☐ Showcard Paints
- ☐ Sign Flashers
- ☐ Sign Letters
- ☐ Signs
- ☐ Silhouette Letters
- ☐ Slides
- ☐ Sound Equipment
- ☐ Sound Service
- ☐ Speakers and Horns
- ☐ Spotlights
- ☐ Stage Draperies
- ☐ Stage Hardware
- ☐ Stage Lighting
- ☐ Stage Rigging
- ☐ Stair Treads
- ☐ Standee Posts
- ☐ Stereopticons
- ☐ Switchboard
- ☐ Structural Glass

- ☐ Theatre Hardware
- ☐ Theatre Games
- ☐ Theatre Premiums
- ☐ Ticket Booths
- ☐ Ticket Chopper
- ☐ Tickets

- ☐ Uniforms
- ☐ Upholstering Materials

- ☐ Vacuum Cleaners
- ☐ Vending Machines
- ☐ Ventilating

- ☐ Wall Covering
- ☐ Wind Breaks
- ☐ Work Lights
- ☐ Water Proofing

OTHER ITEMS

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Owner Architect
Manager Purchasing Agent
Maint. Eng. Supply Dealer

NAME_____

THEATRE or COMPANY_____

ADDRESS_____

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1225 Vine Street

PHILADELPHIA, PA.

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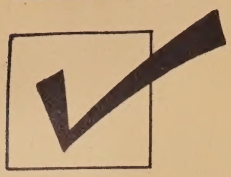

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A SERVICE TO YOU that we are glad to render! TRY IT!

Sound and Projection

Projection Room Planning

A report of the Projection Practice Committee reprinted with full permission from the Journal of the S.M.P.E. Vol. XXXI, No. 5, November, 1938.

THE projection room plans that follow represent the third revision of the plans originally published by the Projection Practice Committee in August, 1932. The second revision appeared in October, 1935.[1]

In following these recommendations, proper authorities should, in all cases, be consulted for possible deviation therefrom. Any fire-protection requirements specified herein are in accordance with the Regulations of the National Board of Fire Underwriters and the National Electric Code, which should be consulted for details.

Projection facilities shall consist of (1) the projection room proper, (2) a film rewind and storage room, (3) a power equipment room, and (4) a lavatory (Fig. 1).

PROJECTION ROOM PROPER

(1.1) *Construction.*—The projection room shall be fire-proof, and shall be supported upon or hung from fire-proof structural steel or masonry. It shall have a minimum height of eight feet and a minimum depth of 12 feet. The length of the room shall be governed by the quantity and the kind of equipment to be installed, but shall in no case be less than 16 feet. Consideration should be given to probable future needs.

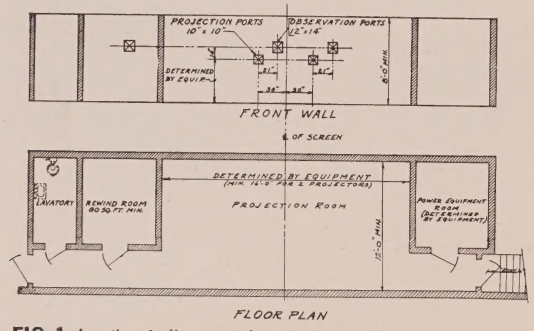


FIG. 1, functional diagram of projection and associated rooms, showing arrangement for two projectors.

The Committee recommends that the projection room proper be so located with respect to the screen that the vertical projection angle shall not exceed 18 degrees. Optical axes of the projectors shall be five feet apart. When two projectors are used, the optical axes shall be equidistant from the center-line of the auditorium. When three projectors are used, the optical axis of the center projector shall be on the center-line of the auditorium.

(1.2) *Floor.*—The floor of the projection room shall be sufficiently strong and solid for the load it is to bear, and shall be constructed in accordance with local building regulations. A generous factor of safety should be allowed. A type of construction recommended by the Committee consists of (1) a reinforced concrete floor-slab not less than four inches thick; (2) a tamped cinder fill above the floor-slab, not less than two inches thick; and (3) a troweled cement finish above the cinder fill not less than two inches thick. Items (2) and (3) have beeen provided in order to accommodate concealed electrical conduits, which should be installed prior to placing the fill and finish. (See Sec. 6.1.)

(1.3) *Walls.*—The projection room walls shall be built of brick, tile, or plaster blocks plastered on the inside with three-quarter-inch cement plaster, or all concrete. The core of the wall shall be not less than four inches thick. When plaster block is used, it shall be supported upon steel framework. All electrical conduits shall be placed into masonry chases in the wall construction so that no pipes shall project beyond the main finish line. (See Sec. 6.1.) In all cases, the inside surface of the front wall shall be smooth and without structural projections. (See Sec. 1.11.)

(1.4) *Doors.*—A door shall be provided at each end of the projection room, at least two feet six inches wide by six feet eight inches high. Doors shall be of the approved one-hour fire-test type and shall be arranged so as to close automatically, swinging outwardly, and shall be kept closed at all times when not used for egress or ingress. It shall be possible at all times to open either door from the inside merely by pushing it. Door jambs shall be made of steel.

(1.5) *Windows.*—Where a projection room is built against the exterior wall of a structure, one or more windows may be provided in the wall. Window construction shall be entirely of steel, and the glass shall be of the shatter-proof type. Metal adjustable louvres or other similar means may be used to exclude light.

(1.6) *Ports.—(General.)* Two ports shall be provided for each projector or single-lens stereopticon, one through which the picture is projected, known as the "projection port" (see Sec. 1.7), and the other for observation of the screen by the projectionist, known as the "observation port" (see Sec. 1.8). The observation port shall be located above and to the right of the projection port. The distance between the horizontal center-lines of the projection port and observation port shall be 14 inches; the distance between the vertical center-line shall be 21 inches.

Where separate spotlight or floodlight machines are installed in the same projection room with motion picture projectors, not more than one port opening (See Sec. 1.9) for each machine shall be provided for both the projectionist's view and for the projection of the light, but two or more spotlights or floodlights may be operated through the same port.

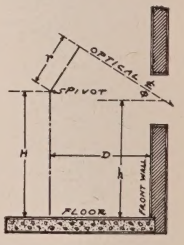
(1.7) *Projection Ports.*—The finished ports shall be 10 x 10 inches, measured on the inside wall (Fig. 1).

The required height of the center-line of the projection port from the floor varies with the make and design of the projection and sound equipment and also with the projection angle. In no case shall any part of the projector be less than four inches from the front wall of the projection room. Table I lists two constants for various angles of projection which, when substituted in the formula, will permit calculating the height of the center-line of the port from the floor, when certain dimensions of the projector are known.

Method of Locating Projector Port

$$h = H + rA - DB$$

Projection Angle (Degrees)	A	B
0	1.00	0.00
2	1.00	0.04
4	1.00	0.07
6	1.01	0.11
8	1.01	0.14
10	1.02	0.18
12	1.02	0.21
14	1.03	0.25
16	1.04	0.29
18	1.05	0.33
20	1.06	0.36
22	1.08	0.40
24	1.09	0.45
26	1.11	0.49
28	1.13	0.53
30	1.16	0.58



(H) is the height of the center of the projector pivot from the floor; (r) is the radial distance of the optical center-line above the center of the pivot; (D) is the distance of the center of the pivot from the front wall of the projection room; ∅ is the angle of projection; and (h) is the required height of the center of the port from the floor of the projection room. Select the values of (A) and (B) corresponding to the angle of projection, and substitute in the formula.

(1.8) *Observation Ports.*—The finished observation port shall be not greater than 12 inches wide x 14 inches high, measured on the inside wall of the projection room.

(1.9) *Other Ports.*—All other ports, such as for effect projectors or spotlamps, shall be as small as practicable, and in no case shall exceed seven and one-half square-feet in area per machine. The location of these ports will, of course, be determined by the dimensions of the equipment and the size and shape of the auditorium and stage, which determine the angles through which the light-beams must be projected. The dimensions should be obtained from the manufacturers of the equipment.

(1.10) *Ceiling.*—The ceiling shall be constructed of four-inch concrete slabs or precast concrete, or of three-inch plaster blocks supported by a steel structure and plastered on the inside with three-quarter-inch cement plaster. All wiring conduit in the ceiling shall be concealed (see Sec. 1.11).

(1.11) *Acoustic Treatment.*—It is recommended that an approved fire-proof acoustic material be used on the walls above a height of four feet from the floor and on the ceiling to reduce the transmission of noise into the auditorium.

REWIND ROOM

(2.1) *Construction.*—The rewind room shall be of fire-proof construction. It shall have a minimum area of 80 square-feet (Fig. 1).

(2.2) *Floor*—See Sec. 1.2.

(2.3) *Walls.*—See Sec. 1.3.

(2.4) *Doors*—The door shall be of the approved one-hour fire-test type, shall be arranged so as to close automatically, swinging outwardly, and shall be kept closed at all times when not used for egress or ingress. Door jams shall be made of steel.

(2.6) *Ports.*—An observation port shall be provided through which the motion picture screen may be seen from within the rewind room. The port shall be at the same height from the floor as the observation ports in the projection room proper, as described in Sec. 1.6.

(2.8) *Observation Port.*—See Sec. 1.8.

(2.9) *Other Ports.*—An observation window shall be provided between the projection room and rewind room, consisting of a fixed fire-proof frame and polished plate wire glass. The window shall not be greater than 14 inches square.

(2.10) *Ceiling.*—See Sec. 1.10.

(2.11) *Acoustic Treatment.*—See Sec. 1.11.

POWER EQUIPMENT ROOM

(3.1) *Construction.*—The room shall be fire-proof and shall be similar in construction to the rewind room (with the exception of the openings (see Fig. 1). The size shall be governed by the quantity and kind of equipment to be installed. Consideration should be given to probable future needs.

LAVATORY

(4.1) *Construction.*—The lavatory shall be provided with running water and modern sanitary facilities, with tiled floor and built-in flush-type medicine closet.

EXITS

(5.1) *General.*—Two exits shall be provided, one at each end of the projection room suite (Fig. 1), permitting direct and unobstructed egress, and shall conform to the regulations of local authorities having jurisdiction. Any stairs communicating with these exits should have risers not in excess of eight inches and minimum tread of not less than nine and one-half inches. The distance between walls should be not less than 36 inches. Winding or helical treads should be avoided. A platform equal in length to the width of the door shall be provided between the door and the first riser. Neither ladders nor scuttles or trap-doors should be used as means of entrance or exit.

CONDUITS AND CIRCUITS

(6.1) *Locations and Sizes.*—Locations and sizes of conduits for projection, control, and sound equipment are determined by the type and design of the equipment. Manufacturers of the equipment should be consulted with regard to the proper layout and sizes of the conduit systems before floors, walls, and ceilings are finished (see Secs. 1.2 and 1.3). Conduits shall in all cases be concealed, and all boxes shall be of the flush-mounting type in walls and ceiling. Conduits terminating in the floors should extend six inches above the finished floor level.

Conduits and wiring should generally be provided for the following circuits:

(1) Projector mechanism
  (a) motor
  (b) changeover
  (c) pilots
(2) Projector arcs and spotlights
  (a) rheostats, generators, or rectifier
(3) Sound equipment
  (a) a-c. power supply
  (b) loud speaker circuits
  (c) amplifier and controls
  (d) ground wire
(4) Projection room lighting
  (a) general (ceiling and Reelites)
  (b) emergency
(5) Theatre auditorium lighting
  (a) dimmer
  (b) emergency
(6) Projector ventilation equipment
  (a) normal
(7) General ventilation system
  (a) normal
  (b) emergency
(8) Miscellaneous
  (a) stage curtain
  (b) telephone
  (c) buzzer
  (d) receptacles

Fig. 2 shows the general arrangement of the equipment requiring these conduits.

(6.2) *Projection Arc Supply and Location.*—In cases where the projection arc supply consists of rotating machinery generating acoustical hum or mechanical vibration, acoustical or mechanical insulation will be required. Arc supply equipment should be located in the power equipment room adjacent to the projection room, and at least four feet from any sound amplifier equipment.

(6.3) *Power Supply to Equipment.*—Where line-voltage variations are greater than = three per cent, the local power company should be requested to rectify the condition. In cases where it is impossible to maintain a steady line-voltage into the theatre, either manually controlled or automatic regulators should be installed.

LIGHTING

(7.1) *Projection Room Lighting.*—Approved vapor-proof ceiling fixtures should be installed for general illumination, as indicated in Fig. 2, and arranged to be lighted on either the normal or the emergency lighting circuit.

An individual vapor-proof relight with wire guard shall be located near each projector or spotlamp, as indicated in Fig. 2.

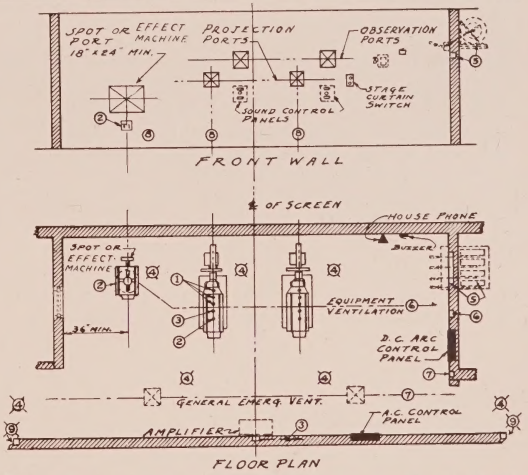


FIG. 2. Projection room equipment, showing conduits, ventilation systems, lights, and switches.

(1) Three conduits in floor to a-c. control panel: for pilot light, changeover and motor feed, for both projectors.
(2) Conduit in floor to d-c. control panel and motor generator: for both projectors and spot (or stereo) via polarized plug-box on front wall of room.
(3) Conduit to pipe ground for each projector, and conduit to loud speakers on stage.
(4) Vapor-proof ceiling fixtures, and vapor-proof Reelites with wire guards for each projector and spot (or stereo).
(5) Dimmer and emergency lighting control.
(6) Projector and spot (or stereo) ventilation system and control switch.
(7) General ventilation system (normal and emergency), with switches inside and outside of doors of projection room.
(8) Wall receptacles.
(9) Wall switches, two-way type, individually controlling each ceiling light fixture from either entrance door.

All lights in the projection room and associated rooms, shall be shaded so as to prevent light from entering the auditorium through the ports.

(7.2) *Rewind Room.*—An approved vapor-proof ceiling fixture shall be installed for general illumination. A drop-light or wall bracket fixture with approved vapor-proof globe shall be provided near or over the rewind table. These lights should be on a separate circuit from the projection room proper.

VENTILATION

(8.1) *Arcs or Spotlight.*—In permanent projection rooms, ventilation shall be provided for the arc lamps independently of the general and emergency ventilating system of the room. Each arc lamp housing shall be connected by a flue to a common duct,

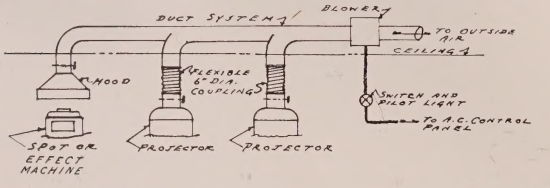


FIG. 3. Equipment ventilation system: lower capacity 400 cu.-ft. per minute; minimum air movement through lamp houses with blower idle, 15 cu.-ft. per minute.

which duct shall lead directly out of doors and shall contain an exhaust fan or blower having a capacity of at least 50 cubic-feet per minute of air for each arc lamp connected thereto. This exhaust fan or blower shall be electrically connected to the projection room wiring system and controlled by a separate switch with pilot lamp within the room. There shall at no time be less than 15 cubic-feet of air per minute flowing through each lamp house into an exhaust system connected to the air outside the building. Fig. 3 shows the general arrangement of the system.

(8.2) *Projection Room and Rewind Room.*—General ventilation of the projection room and rewind room shall be provided by a duct having outlets at one or more points in the ceiling and leading directly to the outer air. Said duct shall be capable of maintaining a natural circulation of air, without blower or fan, at the rate of not less than 20 cubic-feet per minute. Auxiliary circulation in said duct shall be provided by an exhaust fan or blower having a capacity of not less than 200 cubic-feet per minute for normal circulation and having a rated capacity of not less than 2000 cubic-feet per minute for operation in emergency, *i. e.,* fire. In no case shall the exhaust duct system of the room be connected with the ventilating system of the building proper. The emergency operation of said fan shall be controlled by a switch (Fig. 6) operated automatically by the shutter control mechanism when the latter is actuated either manually or by melting of the fusible links. This exhaust fan, providing general and emergency ventilation of the projection room and rewind room shall be connected to the emergency lighting circuit of the room, and shall be controlled for normal circulation by a switch

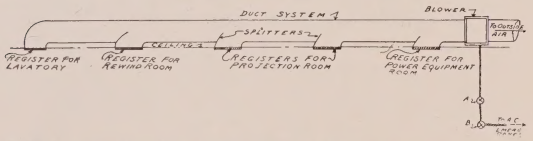


FIG. 4. General and emergency ventilation system: normal blower capacity 200 cu.-ft. per minute; emergency capacity 2000 cu.-ft. per minute.
(A) Switch and pilot lamp for normal operation, inside projection room; (B) switch and pilot lamp for emergency operation, outside door of projection room; also connected to port fire-shutter control mechanism.
(Two or more fresh-air intakes required at or near the floor at opposite ends of the room.)

and pilot lamp within the room. The ducts shall be of incombustible material, and shall be kept at least two inches from combustible material or separated therefrom by approved noncombustible heat-insulating material, not less than one inch thick. Projection rooms and rewind rooms shall have two or more separate fresh air intake ducts at or near the floor and at opposite ends of the room, entirely independent of and in no way connected to the exhaust ducts of the room. Such air intake ducts may be connected into the main ventilating system of the building. (See Fig. 4 for general arrangement.)

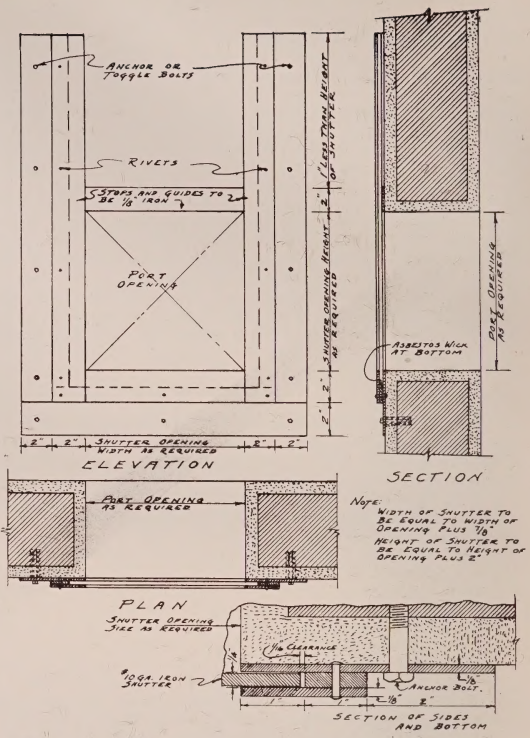


FIG. 5. Example of port shutter construction. Although this construction shows rivets, spot welding is preferable.

PORT SHUTTERS

(9.1) *Construction.*—Each port opening shall be provided with a gravity shutter of approved construction, said shutter and guides shall be made of not less than 10-gauge iron, and the shutter should set into the guides not less than one inch at sides and bottom and overlap the top of the port opening by not less than one inch, when closed. Guide parts should preferably be welded (see Fig. 5).

Shutters shall be suspended, arranged, and inter-connected, so that all port shutters will close upon the operating of some suitable fusible or mechanical releasing device, designed to operate automatically in case of fire or other contingency requiring immediate and complete isolation of the contents of the projection room from other portions of the building. Each shutter shall have its own individual fusible link directly above it. A fusible link shall be located also above each upper projector magazine, which upon operating shall close all the shutters. There

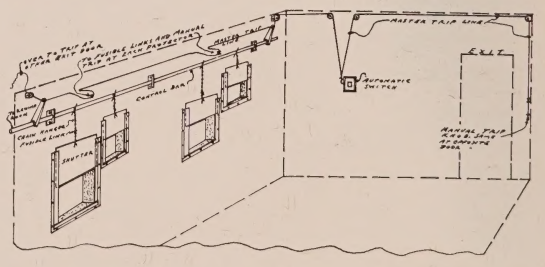


FIG. 6. One of many possible arrangements of the port fire shutter control. The automatic switch operates the exhaust plan and emergency light.

shall also be provided suitable means for manually closing all shutters simultaneously from any projector head and from a point near each door within the projection room. Shutters shall be free-acting. Shutters on openings not in use shall always be kept closed. Fig. 6 indicates one of many ways of arranging the shutter control system.

All large shutters such as for spotlamps and special-effect machines (when used) shall be provided with weights to facilitate operating them manually.

(9.2) *Noise Transmission.*—The Committee recommends the use of means other than glass in projection ports to prevent transmission of noise from the projector room to the auditorium, such as reducing the free aperture of the port to the minimum size necessary for projection by use of fire-proof sound baffles.

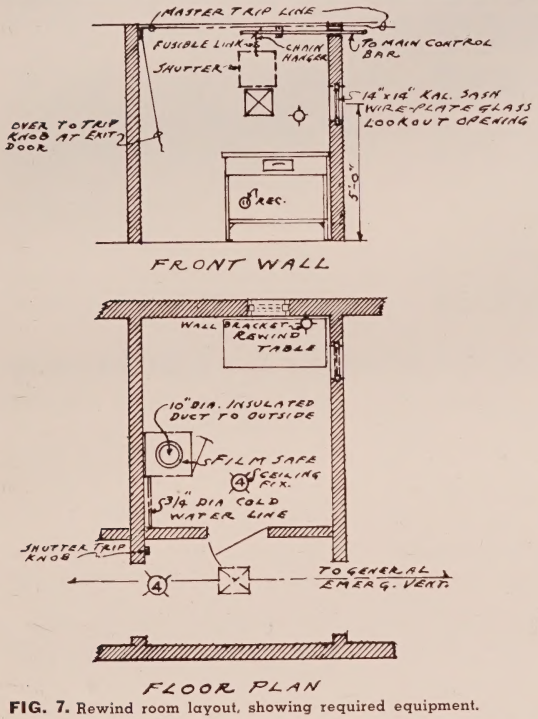


FIG. 7. Rewind room layout, showing required equipment.

Observation ports shall be fitted with a good grade of plate glass set in a metal frame at an angle to the vertical to avoid direct reflection, and easily removable from the inside of the projection room for cleaning. The purpose of this glass is to prevent transmission of noise into the auditorium.

HEATING

(10.1) *General.*—Proper provision shall be made for heating the projection room. The same facilities used for heating the theatre should be extended to the projection room.

PAINTING AND FLOOR COVERING

(11.1) *Painting.*—The color of the walls shall be olive green to the height of the acoustic plaster. The latter should be painted in accordance with the instructions of the manufacturer of the material, preferably a dull buff color. The ceiling should likewise be painted white. All iron work of the projection ports shall be covered with at least two coats of flat black paint.

(11.2) *Floor Covering.*—Where local regulations permit, the floors of the projection room and rewind room should be covered with a good grade of battleship linoleum cemented to the floor. The floor covering should be laid before the equipment is installed.

EQUIPMENT

(12.1) *Projection Room.*—All equipment to be used in the projection room should be of approved type, including the projectors, arc lamps, sound equipment, etc.

All shelves, furniture, and fixtures within the projection suite shall be constructed of metal or other incombustible material. A metal container for hot carbon stubs shall be provided.

Adequate locker space shall also be provided.

(12.2) *Rewind Room.*—In the rewind room shall be provided an approved fire-proof film safe or cabinet, a table, approved rewind equipment, a splicer, and approved scrap film can (Fig. 7).

The film safe or cabinet shall be capable of holding 25,000 feet of 35-mm. film.

All tables and racks and all furniture shall be of metal or other non-combustible material and should be kept at least four inches away from any radiator or heating apparatus. Tables shall not be provided with racks or shelves beneath them whereon may be kept film or other materials. The scrap film can shall have an automatic-closing hinged cover and so arranged that the scrape film is kept under water at all times. Quantities of collodion, amyl acetate, or other similar inflammable cements or liquids kept in the rewind room for the purpose of splicing film, shall not exceed one-half pint. No stock of inflammable materials of any sort whatsoever shall be permitted within the rewind suite except as specifically mentioned herein. All splices of film shall be made with approved mechanical cutting and splicing machines. No hand cutting or splicing shall be permitted. Film shall be kept in the film cabinets at all times except when being projected or rewound. Any films in addition to those used for the current showing or in excess of that permitted by local authorities shall be kept in their original shipping containers.

(12.3) *Fire Extinguishing Equipment.*—Local authorities having jurisdiction with regard to fire extinguishing equipment should be consulted regarding the proper types, numbers, and locations.

MISCELLANEOUS

(13.1) "No smoking" signs should be posted in prominent places and matches should not be carried by any employee.

(13.2) *Operation.*—Motion picture projectors shall be operated by and shall be in charge of qualified projectionists who shall not be minors. The projectionist should be stationed constantly at the operating side of the projector while it is in operation. A proper factor of safety in operation, as well as avoidance of imperfect operation of projection equipment, or unjustified interruptions of service can be attained only by having an adequate personnel in the projection room.

(13.3) *Action in Case of Fire.*—In the event of film fire in the projector or elsewhere in a projection or rewind room, the projectionist shall immediately shut down the projector and arc lamps, operate the port shutter release at the point nearest him, turn on the auditorium lights, leave the projection room immediately, and notify the manager of the theatre or building. An automatic switch is recommended for the electrical operations mentioned.

SUB-COMMITTEE ON PROJECTION ROOM PLANS

S. Harris, *Chairman*

A. Goodman — C. C. Dash
B. Schlanger — P. J. Larsen
J. J. Sefing — J. S. Pesce
E. R. Morin

REFERENCE

[1] Report of Projection Practice Committee, J. Soc. Mot. Pict. Eng., XXV (Oct., 1935), No. 4, p. 341.

Members of the Projection Practice Sub-Committee of the Society of Motion Picture Engineers include: H. Rubin, Paramount Publix, chairman; T. C. Barrows, Metropolitan, Boston; H. D. Behr, Wilmer and Vincent; F. E. Cahill, Warners; C. C. Dash, Hertner Electric Co.; A. S. Dickinson, MPPDA; J. K. Elderkin; R. R. French, Maritime M. P. Supply Co.; J. Frank, Jr., National Theatre Supply; E. R. Geib, National Carbon Co.; M. Gessin, Trans-Lux; A. Goodman, RCA; H. Griffin, International Projector; S. Harris, SMPE, M. Hobart, Technicolor; J. Hopkins, Paramount, New York City; C. Horstman, RKO; L. B. Isaac, Loew's; P. J. Larsen, Baird Television; J. H. Littenberg, Altec; E. R. Morin, Conn. State Police; J. R. Prater, Congress, Palouse, Wash.; J. J. Sefing; F. H. Richardson; Robert O. Walker, Walker-American Corp.; A. T. Williams, Weston Electric Instrument Corp.

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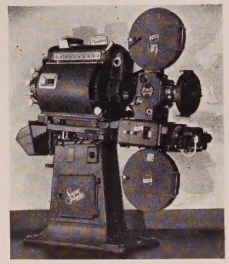
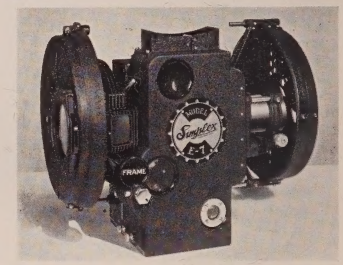
E·7
PROJECTOR

Simplex Projectors give splendid results over a long period, but we have continued to make important improvements and from time to time, as conditions required, have brought out new models. In line with this policy we have placed on the market the new Simplex E-7 which is definitely recognizd as the world's finest projector. The special advantages of Simplex E-7 and high quality of all Simplex equipment are the result of our long experience in this field, great skill and vast manufacturing facilities which enable us to supply exhibitors with the finest equipment at the lowest price possible without sacrifice of essential operating requirements.

● The limited space allotted in this publication to Simplex products — the only complete line of motion picture equipment manufactured by any company — makes it necessary to greatly condense the information supplied. Under these conditions all that is possible to give is a partial listing of important integral parts of the equipment with a brief reference to the purpose they serve. It would of course be more satisfactory to describe how these parts function as that would more clearly indicate the reasons for the great care taken in the design and construction of Simplex equipment but this information, if desired, may be secured from other sources or our own publications.





INTERNATIONAL PROJECTOR CORP.

SOME OF THE SPECIAL ADVANTAGES OF SIMPLEX E-7 MECHANISM

SYNCHRONIZED FRONT AND REAR SHUTTERS—Shutters are on same shaft and each shutter acts upon one-half of the beam, creating a dissolving effect and giving 12½% more light. MORE LIGHT, SHARPER PICTURE, LESS EYE STRAIN.

AUTOMATIC FIRE SHUTTER SAFETY TRIP—Releases fire shutter when film remains stationary. Cuts off light and heat. ABSOLUTE FIRE SAFETY.

ONE-SHOT OILING SYSTEM—By a slight pressure on the oil pump lever, filtered oil is supplied in sufficient quantity at all times. CLEANER PICTURE, BETTER SHOW, LONGER LIFE, LESS MAINTENANCE.

E-75 AIR DEFLECTOR AND APERTURE COOLING UNIT — IMPROVES LIGHT. REDUCES HEAT AT THE APERTURE. KEEPS MECHANISM CLEANER. Prevents drawing of gasses from the arc lamp into the projection room.

REMOVABLE FILM GATE—READILY DEMOUNTABLE FOR CLEANING AND ADJUSTMENT.

FILM GATE STUDS — Gate wabble eliminated. HELP STEADY THE IMAGE. PROOF AGAINST WEAR.

CONE-SHAPED PAD SPRINGS—Pad keeps both edges of film under equal tension. REDUCES SPROCKET WEAR.

TENSION PAD AND INTERMITTENT SHOE COMBINATION — HOLDS FILM SECURELY FOR STEADY IMAGE.

DEMOUNTABLE FILM TRAP—Particles of emulsion can be easily cleaned away between reels. AVOIDS SCRATCHING FILM.

STUDIO TYPE GUIDES—Side motion of film controlled by replaceable guides acting in conjunction with guide rollers. PREVENTS SIDE SWAY OF FILM.

THREADING FACILITIES — Quicker, more accurate threading. GIVES PROJECTIONIST MORE TIME TO WATCH HIS SCREEN AND ATTEND TO MAINTENANCE.

FRAMING LAMP — Directly behind aperture. REDUCES MIS-FRAMING.

ILLUMINATED, WHITE INTERIOR— Dirt can be easily seen and promptly removed. PROMOTES CLEANLINESS.

SIGHT BOX — Easily removable. New fin construction. DISSIPATES HEAT.

REAR SHUTTER COOLING FINS — Draw the air backward from aperture and pass it around outside the mechanism. INSURE MUCH COOLER FILM PATH.

REAR SHUTTER GUARD — Can be quickly removed without disturbing lamphouse. SIMPLIFIES CLEANING.

RING TYPE GOVERNOR FOR FIRE SHUTTER—Unique type of control operates on principle of a gyroscope. BIND-PROOF, SILENT.

OVERSIZE DRIVE GEARS—Revolve on fixed studs. Place pressure of operation where it causes least wear. Rebushing of main frame eliminated. LONGER LIFE — EASIER MAINTENANCE.

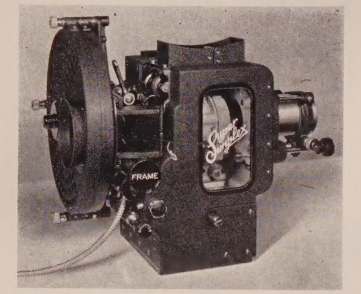
SYNCHRONIZING DEVICE—Prevents backlash and travel ghost caused by wear in shutter assemblies. GIVES SHARPER PICTURE.

DOUBLE BEARING ARM AND COVER — WARP-PROOF UNDER ANY LAMP.

INTERMITTENT MOVEMENT — Readily removable. Unnecessary to take down or disturb any part of the soundhead. FACILITATES MAINTENANCE.

INTERMITTENT MOVEMENT OIL SYSTEM—Reservoir can be filled from either side. Excess oil overflows on drive side. PREVENTS BLURRED PICTURES, NOISY SOUND.

SHOCK PROOF GEAR—Eliminates vibration caused by the action of the intermittent movement. RESULTS IN QUIETER, SMOOTHER OPERATION.



Super Simplex PROJECTOR

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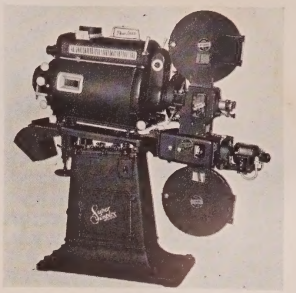

The sturdy construction of Super Simplex Mechanism and Pedestal and many important improvements in the design have won a worldwide reputation for Super Simplex Projector. A tried and proved Simplex product, used in thousands of theatres, Super Simplex Projector to a notable degree made possible many of the tremendous advances of the motion picture industry during the past ten years. In addition to the well-known basic mechanical superiority of Simplex Projectors, which has given our equipment an undisputed international leadership for over a quarter of a century, Super Simplex Projector has many special patented features. Super Simplex Projector is an assurance of priceless Simplex dependability, superior projection, ease of operation, low maintenance costs and many other advantages which make a strong appeal to exhibitors, managers and projectionists.

● **The details of various important parts, given herewith, are necessarily limited and intended solely for the purpose of supplying as much essential information as possible in condensed form. Simplex precision and references to materials, selected with scientific care, somewhat stress the manufacture of Super Simplex Projectors but we wish to emphasize the fact that all Simplex Equipment is made with the same adherance to our rigid requirements. Simplex Quality, the world standard, will be maintained under all conditions.**

SUPER SIMPLEX REAR SHUTTER—Built as an integral part of the Super Simplex Mechanism. Reduces the heat at the aperture from 50% to 75% as compared with the old type Front Shutter.

ADJUSTABLE REVOLVING SHUTTER—Permits adjustment to compensate for wear in the gear train.

PATENTED FILM TRAP LOCKING DEVICE—Prevents film trap door being opened by film patches.

MAIN FRAME CASTING—Improved design and sturdier construction.

INTERMITTENT MOVEMENT—Patented star and cam adjusting feature.

LATERAL FILM GUIDE ROLLERS—Of large diameter. Revolve very easily. Eliminate possibility of cutting film by roller remaining stationary.

LENS HOLDER—Has front and rear lens supports and is rigidly attached to the main frame.

REMOVABLE FILM TRAP DOOR AND PRESSURE PAD ASSEMBLY—Very convenient for cleaning and repairing — eliminates "chatter."

HARDENED AND GROUND VERTICAL SHAFT—More than doubles wearing quality. Greatly reduces possibility of bindups.

HARDENED AND GROUND SYNCHRONIZING GEAR SHAFT—Reduces wear and increases smoothness of operation.

BAKELITE MICARTA GEARS—Give longer wear and quieter operation.

MAIN DRIVE GEAR FASTENING SCREW LOCKING DEVICE—Prevents loosening of main drive attaching screw.

MICROMETER FOCUSING DEVICE ON LENS MOUNT—Prevents backlash and maintains perfect focus.

MAIN DRIVE SHAFT—Hardened and ground, and tubular construction, provides reservoir for oil, insuring adequate lubrication at all times.

SLIP-IN TYPE APERTURE PLATE—For standard and special effects.

STAR WHEEL—This and other parts are hardened and then ground. which gives longer wear and permits finer tolerances than machining soft product and then hardening.

CAM AND CAM PIN—Quality of material, hardness, workmanship and exact tolerances make this far superior to any similar product. Insures quietness and smoothness of operation.

INTERMITTENT SPROCKET—Rims and Radii of teeth hardened, and ground to almost zero tolerance by specially designed precision machinery.

DYNAMICALLY BALANCED FLYWHEEL—Reduces vibration.

INTERMEDIATE GEAR SHAFT—Super Simplex hardened and ground intermediate gear shaft gives twice the wear of soft shafts.

SPECIALLY DESIGNED REAR SHUTTER BRACKET—Very sturdy and greatly reduces the possibility of vibration — an integral part of mechanism, not an attachment.

SUPER SIMPLEX PEDESTAL—Designed for modern heavy duty equipment, but so flexible little effort is required to raise or lower, or horizontally adjust the entire apparatus. Can be accommodated almost instantaneously to the screen position. Stand easily leveled at all four corners. Excellent rigidity secured by means of leveling bolts.

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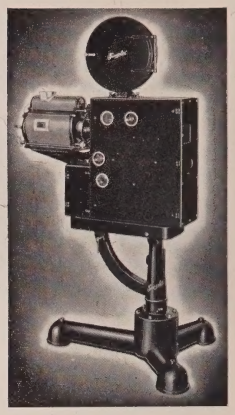
SP SOUND PROJECTOR



Designed to meet the requirements of small theatres, auditoriums, schools, colleges, etc. Easy to operate, inexpensive to maintain, designed to stand up well under all conditions.

MECHANISM

Automatic fire shutter eliminates the possibility of fire; Film Trap and Gate actually straightens the film out at the aperture during projection, eliminates buckling, and gives a clearer and steadier picture; convenient lateral adjustment of film permits proper location of sound track at all times; Take-up Sprocket prevents uneven film pull on sound sprocket. Entirely enclosed, Rear Shutter reduces heat upon the film at least 50%. Has adjustable take-up; advanced scientific lubrication system and gyroscopic filter.

SOUND UNIT

The Sound Unit is built right into the projector, driven by the projector motor with no belts or chains. Accurately machined curved aperture plate keeps film in perfect optical plane with relation to sound reproducing optical system; also prevents gathering of emulsion on film at this point and weaving of film in passing through reproducing light beam. Photo-electric cell mounted directly behind sound aperture plate entirely enclosed by shield with the exception of a small window to allow passage of light from optical system. Gyroscopic filter assures proper control of film speed at scanning point.

ACCESSORIES

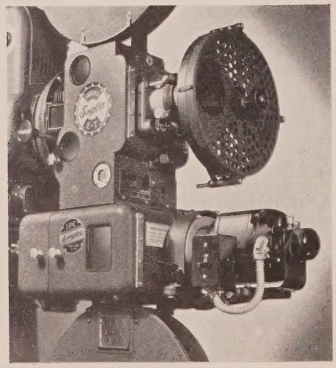
Amplifier, Loud Speaker and Baffles are designed and manufactured to meet highest Simplex Standards. Guaranteed to give the highest type of professional sound reproduction. Amplifier operates on 105-130 volts, 50-60 cycles, AC power output 20 watts undistorted. Flat frequency response. Has sound on film or phonograph gain control, high or low frequency control, on-and-off switch and pilot light. Electro dynamic loud speaker with 12" cone. Power handling capacity of over 20 watts. Non-directional theatre type Baffle 41" high. Equipment, complete, ready for installation, will fill every requirement.

MAZDA EQUIPMENT

Very satisfactory for the smaller houses with a limited seating capacity. Duplex construction—one metal lamphouse within another—provides passage of air from ventilating fan in the projector. This cooling system permits using a 1000 or 1500-watt 105-120 volt lamp (AC or DC). Equipped with Mogul prefocus socket for prefocused T-20 lamp, B & L Reflector, Fresnal Condensing Lens—and switches for sound and picture changeover. Sturdily built, extremely efficient. All accessories of the highest quality.

LOW INTENSITY REFLECTOR ARC LAMP

Not a mere attachment. Designed and built for Simplex Sound Projector Type SP. Carbons are fed automatically and continuously so that a uniform arc gap is secured without manual control. May be operated from 15 to 21 amperes at 55 volts DC; 7 mm. negative and 10 mm. positive 8" long carbons are used. Extremely economical to operate. Gives a beautiful picture at very low cost. Mercoid sound changeover switch on dowser and other modern improvements similar to that used on larger and more costly equipment.



Simplex ★★★★ Sound

SYSTEMS

• We hope that in spite of great condensation, the details we here furnish regarding Simplex ★★★★ Sound System sufficient interest will be created to request the manufacturer or distributors to supply additional information.

Although Simplex Sound Systems are built to meet today's needs they are also designed for the future and can accommodate dual track stereophonic recordings, push-pull and any of the proposed forms of control track or other changes when approved by the producers.

It is essential to understand that the quality of all Simplex Systems is the same. Theatre owners can, therefore, meet their budgets and theatre requirements by installing the correct number of amplifiers to provide the proper output and the number and types of loudspeakers to supply capacity and distribution. Specifications and details of the different Simplex Sound Systems will be found on the next page.

Specifications - SIMPLEX ★ ★ ★ ★ SOUND SYSTEMS

SIMPLEX TYPE E SOUND SYSTEM

Simplex Four-Star Rotary Stabilizer Sound Heads
10 Watt Undistorted Output
Monitor Amplifier and Monitor Loudspeaker
2-Way Permanent Magnet Speaker System with:
- One (1) High and
- One (1) Low Frequency Speaker Unit
- One (1) 1 x 3 Exponential High Frequency Horn
- One (1) Low Frequency Folded exponential Horn

SIMPLEX TYPE A-15 SOUND SYSTEM

Simplex Four-Star Rotary Stabilizer Sound Heads
D.C. Excitation
15 Watt Undistorted Output
Monitor Amplifier and Monitor Loud Speaker
2-Way Permanent Magnet Speaker System with:
- One (1) High and one (1) Low Frequency Speaker Unit
- One (1) Multi-cellular exponential High Frequency Horn
- One (1) Folded exponential Low Frequency Horn

SIMPLEX TYPE A-30 SOUND SYSTEM

Simplex Four-Star Rotary Stabilizer Sound Heads
D.C. Excitation
30 Watt Undistorted Output
Monitor Amplifier and Monitor Loud Speaker
Dual Emergency Volume Control Amplifiers
2-Way Permanent Magnet Speaker System with:
- One (1) High and one (1) Low Frequency Speaker Unit
- One (1) Multi-cellular exponential High Frequency Horn
- One (1) Folded exponential Low Frequency Horn

SIMPLEX B-30 SOUND SYSTEM

Simplex Four-Star Rotary Stabilizer Sound Heads
D.C. Excitation
30 Watt Undistorted Output
Monitor Amplifier and Monitor Loud Speaker
Dual Emergency Volume Control Amplifiers
2-Way Permanent Magnet Speaker System with:
- Two (2) High Frequency and two (2) Low Frequency Permanent Magnet Speakers
- One (1) Multi-cellular exponential High Frequency Horn with double throat
- Two (2) Folded exponential Low Frequency Horns

SIMPLEX B-60 SOUND SYSTEM

Simplex Four-Star Rotary Stabilizer Sound Heads
D.C. Excitation
60 Watt Undistorted Output
Monitor Amplifier and Monitor Loud Speaker
Dual Emergency Volume Control Amplifiers
2-Way Permanent Magnet Speaker System with:
- Two (2) High Frequency and two (2) Low Frequency Permanent Magnet Speakers
- One (1) Multi-cellular exponential High Frequency Horn with double throat
- Two (2) Folded exponential Low Frequency Horns

SIMPLEX C-60 SOUND SYSTEM

Simplex Four-Star Rotary Stabilizer Sound Heads
D.C. Excitation
60 Watt Undistorted Output
Monitor Amplifier and Monitor Loud Speaker
Dual Emergency Volume Control Amplifiers
Two (2) High Frequency and four (4) Low Frequency Energized Speakers
One (1) Multi-cellulor exponential High Frequency Horn with double throat
Two (2) Folded exponential Low Frequency Horns

Features - SIMPLEX ★ ★ ★ ★ SOUND SYSTEMS

SOUND MECHANISM

FILM MOTION past the scanning light beam is controlled by the well-known Rotary Stabilizer Principle.

PREFOCUSED EXCITER LAMP

HIGHLY EFFICIENT OIL PROOF OPTICAL SYSTEM projects image 1¼ mils. wide on sound track.

PHOTO-ELECTRIC CELL vertical mounting eliminates microphonic noise.

LATERAL FILM GUIDE AND PRESSURE ROLLER equipped with trigger control for easy operation.

DRIVE MOTOR, cradle suspended, oversize, one-quarter horsepower split-phase induction motor with ball bearing mounted rotor, insures constant speed with variation of less than 0.5% with voltages from 105 to 125 volts. Flywheel of proper design insures correct starting speed.

FILM DRIVE SPROCKETS, sound and holdback, included. All shafts of drive mechanism rotate on dust-proof ball bearings.

DRIVE MECHANISM ONE ASSEMBLY easily removable as a single unit by removing four screws.

SIGHT OIL GAUGE

SOUND-HEAD design insures accurate alignment of projector drive gears and easy installation or removal of projector mechanism.

SIMPLEX VOLUME CONTROL AMPLIFIER CABINET is neat and compact. Permits mounting on front wall of projection room to avoid vibration. May be partially recessed in wall for concealment of wiring.

VOLUME CONTROL for system is a special design, de-tented step-by-step potentiometer having 19-2db. steps.

TWO-STAGE RESISTANCE COUPLED VOLTAGE AMPLIFIER

ELECTRONIC SOUND CHANGE-OVER

PHOTO-ELECTRIC CELL BALANCERS equalize the signal input to the power amplifier.

DUAL AMPLIFIER UNITS with single shaft, operating both volume controls in unison, can be accommodated. This provides for emergency operation or dual track reproduction.

POST-EQUALIZATION

CO-AXIAL CABLE of special low capacity couples photo-electric cell output to volume control amplifier. Low capacity shielded cable connects volume control amplifier to power amplifier.

SIMPLEX MAIN AMPLIFIER EQUIPMENT

POWER TRANSFORMER mounted on each amplifier chassis is oversize to render continuous service on 50 or 60 cycles and tapped to compensate for various line voltages of 105, 115, and 125 volts.

AMPLIFIER FREQUENCY CHARACTERISTICS. Warping adjustments permit variations in the low frequency and high frequency response characteristics, to match various loudspeaker characteristics and equalize for theatre acoustic conditions.

LOUDSPEAKER NET-WORK efficiently couples amplifier output to the two-way loudspeaker system.

LOUDSPEAKER NET-WORK CONTROL PANEL incorporates switches for speaker testing and emergency operation on low frequency speakers only.

AMPLIFIER SWITCHING FACILITIES are provided which permit isolation of an inoperative amplifier from the signal circuit without disconnecting from power supply.

COMPACT, STURDY CONSTRUCTION throughout minimizes space, simplifies installation, and reduces maintenance cost. All parts on special mountings easily removable to facilitate servicing.

SIMPLEX LOUDSPEAKER EQUIPMENT

LOUDSPEAKER EQUIPMENT ASSURES HIGHEST QUALITY. Genuine two-way loudspeaker system supplied with all Simplex 4-Star Sound equipments to assure highest quality reproduced sound and uniform distribution, covering every seat in theatre, without distortion due to overload.

HIGH FREQUENCY LOUDSPEAKER. Genuine multi-cellular exponential horn.

LOW FREQUENCY LOUDSPEAKER folded exponential horns of wood construction throughout. Driving units of high power handling capacity and efficiency.

MONITOR LOUDSPEAKER TYPE LU-100 Design is a definite step toward extension of the frequency response over that generally found in monitor speakers.

MONITOR AMPLIFIER TYPE AM-107 provides adequate power to drive the monitor loudspeaker.

EXCITER LAMP OPERATION ON ALTERNATING CURRENT is possible in the event of failure in the rectifier system regularly supplying direct current.

Distributed by **NATIONAL THEATRE SUPPLY COMPANY**

Performance Standards for Theatre Sound

A leading authority analyzes the collaboration which exists between the studios and the equipment manufacturer—and how it affects you.

BY JOHN K. HILLIARD

WHAT is required of a sound system in a motion picture theatre? Which features of the system are necessities, and which are luxuries? How large should the system be? How long will it last? Does it become obsolete or just wear out? The Exhibitor is often confronted with just such questions, so we believe that a discussion of these problems in THE THEATRE CATALOG will be of mutual benefit,—to exhibitor, studios, and the public who pay to see motion pictures.

SOUND motion pictures are no longer a novelty. They are now the means by which the production, distribution, and exhibition elements of the motion picture industry entertain the public. They are our livelihood. Through sincere cooperation of the different branches of the industry mutual problems can be worked out to mutual advantage. As one of its functions, the Academy Research Council is making every effort to provide for the exhibitor an organization to which he may come for unbiased advice and for information on technical matters.

The Academy Research Council, immediately after its organization in 1934, devoted most of its time to problems concerned primarily with production. However, it was soon realized that there were great differences in product as recorded by the different studios, as well as great differences in the same picture as reproduced in different theatres.

In attacking the first part of the problem,—the recording,—the intention was to standardize recording results to an extent where all Hollywood product would give good sound in all theatres. It was realized that both art and science have played a most important part in sound motion pictures, and that sound provides a necessary adjunct to the picture in creating an illusion of reality. There was no thought of introducing a degree of uniformity approaching monotony or lack of the effect of creative effort. On the contrary it was felt that this uniformity was necessary in order that production and sound departments, forearmed with a knowledge of the reproducer characteristic, could obtain the utmost in naturalness and showmanship to the mutual benefit of the whole industry.

Progress in this direction has been made. While differences in product still exist, these differences have been minimized to a great extent in the past three or four years. A well-equipped, well-adjusted theatre neither favors nor penalizes any one particular product.

HOW SHOULD A SOUND SYSTEM BE ADJUSTED?

At the same time the second aspect of the problem—theatre reproduction—was worked on. Listening tests were conducted in a great number of theatres and the results correlated with engineering data. This led to the adoption of the Research Council Standard Electrical Characteristics. These are an engineering statement of the best adjustment for approved sound systems and are available upon written request to the Council's offices.

John K. Hilliard received degrees from Hamline University and the University of Minnesota. After leaving college, he was a consulting radio engineer. Joining a Hollywood studio sound department, he has been engaged in that type of work for 15 years, the last eight of which have been spent as sound engineer at Metro. He is a member of the American Institute of Electrical Engineers, the Institute of Radio Engineers, and the Society of Motion Picture Engineers, and an active participant in the work of the Research Council of the Academy of Motion Picture Arts and Sciences, heading the theatre standardization program.

Experience has shown that the use of these standard adjustments leads to the best overall quality obtainable with current sound recordings. In most cases, a slightly different adjustment is necessary for each make and type of loud speaker system. However, hundreds of recent installations have borne out the fact that if theatres are so adjusted, the product of any one producer is not penalized, and the overall quality of all product is more uniform.

The quality obtained is modified, of course, by acoustical conditions in the theatre itself, but it has also been found that even where bad acoustical conditions exist the effect of these conditions on the product is minimized if these standard adjustments are used.

WHAT FEATURES SHOULD BE INCLUDED IN THE SOUND SYSTEM?

In addition, recommendations on performance standards for theatre sound reproducing equipment were drawn up as a guide for manufacturers and as an unbiased impartial source of information for the exhibitor.

Where we, of course, do not advise on specific equipments by name, we have set up minimum requirements for equipment performance which are sufficient to guide you in these matters. One thing you may be sure of—if you follow our recommendations, you will avoid buying equipment which is not representative of the best available. On the other hand, such equipment will have no unnecessary features which would add to the cost of installation and maintenance.

Thus, you can be assured that the Hollywood studios and the sound equipment manufacturers are going along step by step, and this cooperation between these two groups of the industry will insure your getting the maximum benefit from every dollar spent by you on equipment replacement or maintenance.

As a result of this phase of our program, it is now possible for the exhibitor to purchase better sound equipment at a lower price than would have been possible without the Committee's coordinating efforts. While the Committee cannot of course claim credit entirely, we believe, for example, that we have contributed to making it possible to now purchase 50 watts of power in theatre equipment for the approximate price of 2½ watts 10 years ago.

DOES THE EQUIPMENT BECOME OBSOLETE?

In addition and of utmost importance to the exhibitors, is the fact that such recommendations include provisions for developments now taking place or developments expected to take place within the life of currently purchased equipment. Consequently, new equipment can be utilized as part of any future development by addition to, rather than substitution for, this equipment; in other words, new developments will not make current equipment obsolete.

The usual manner in which this type of standardization takes place is through the manufacturing and service organizations, as they are in closer touch with the studios and with technical advancements which may take place at the source of the product. Accordingly, the exhibitor is not always conscious of the fact that this sort of progress is taking place. Consequently, we are striving to make our activities of actual, tangible benefit to the exhibitor.

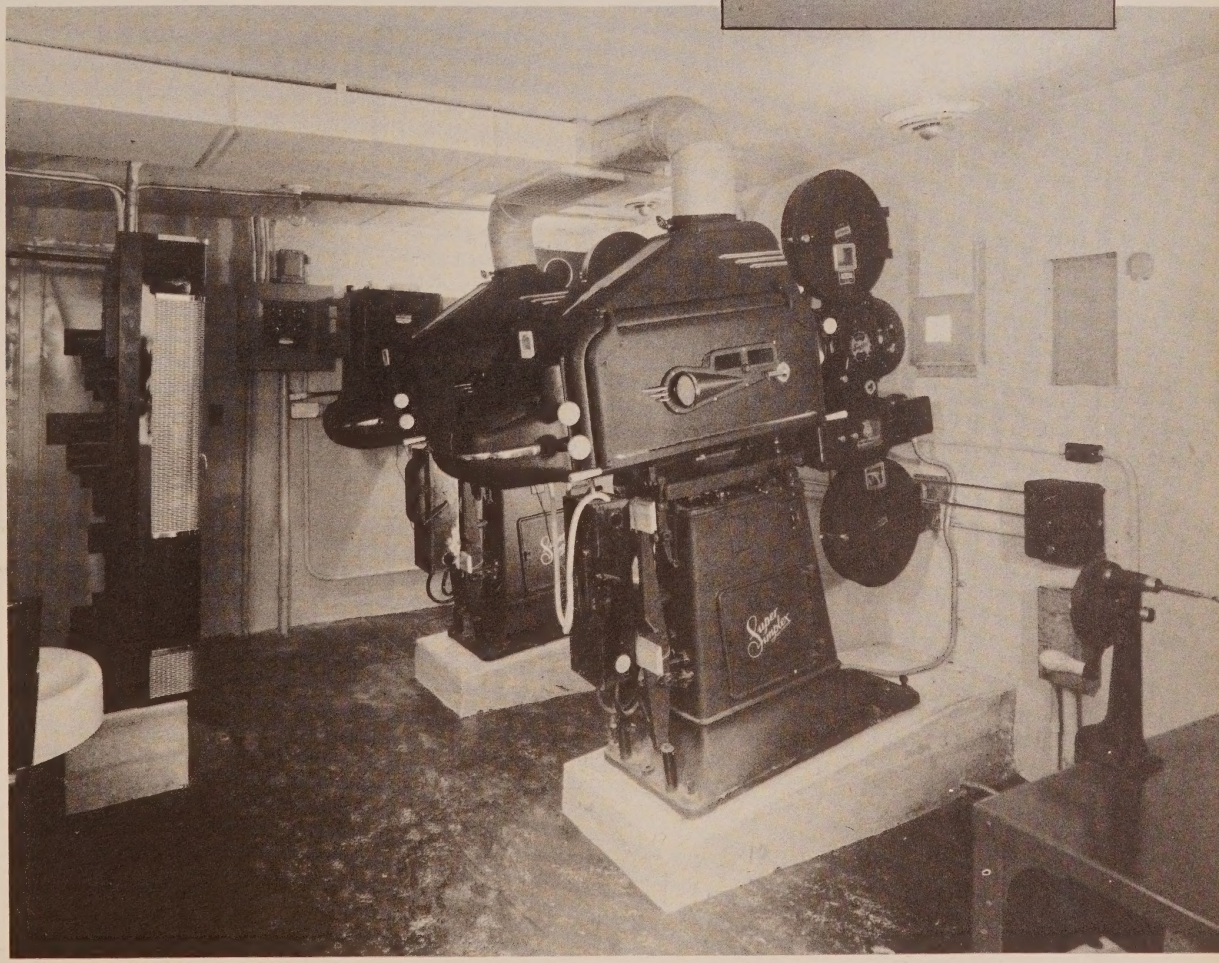
WHAT AMPLIFIER POWER SHOULD A SOUND SYSTEM HAVE?

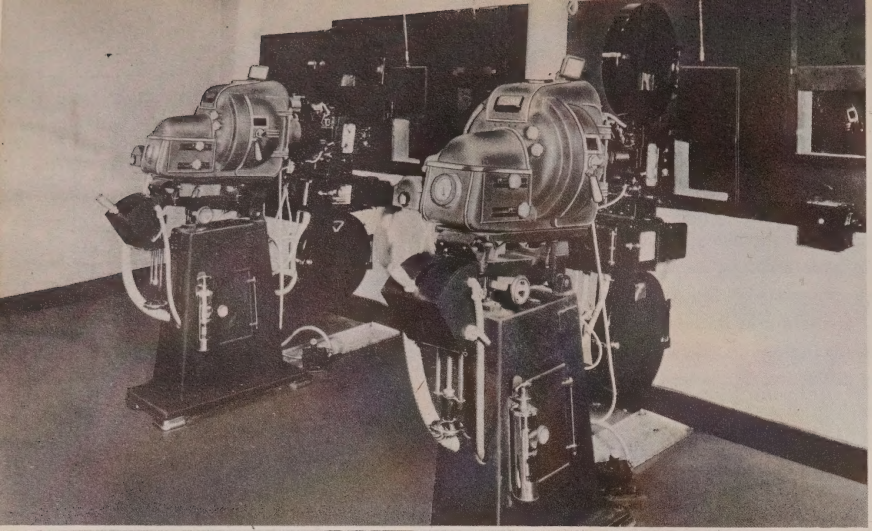
Many people believe that the volume of sound—that is, the loudness—that can be obtained in a theatre, depends entirely upon the amount of power installed. This is only partially true. Power is required for increased loudness for the proper presentation of special effects such as the earthquake in "San Francisco," the breaking up of the icebergs in "Spawn of the North" or the breaking of the dam and the resulting flood in "The Rains Came." But

It isn't necessary to have a long memory to recall the days when the "booth" was an afterthought in theatre construction; was often hung from the ceiling with entry through a steel ladder and trap door; and seldom was properly ventilated or adequately fire protected. Luckily those days are gone. The perfection that became necessary with the advent of sound; the constant striving for improvement by Supply Dealers and by the S.M.P.E.; some very sensible State building and health codes that were adopted; and a greater consciousness of the importance of projection room facilities on the part of Owners and Architects, has produced amazing results. The ugly duckling is now an efficient workshop keeping pace with constantly improving projection and sound equipment.

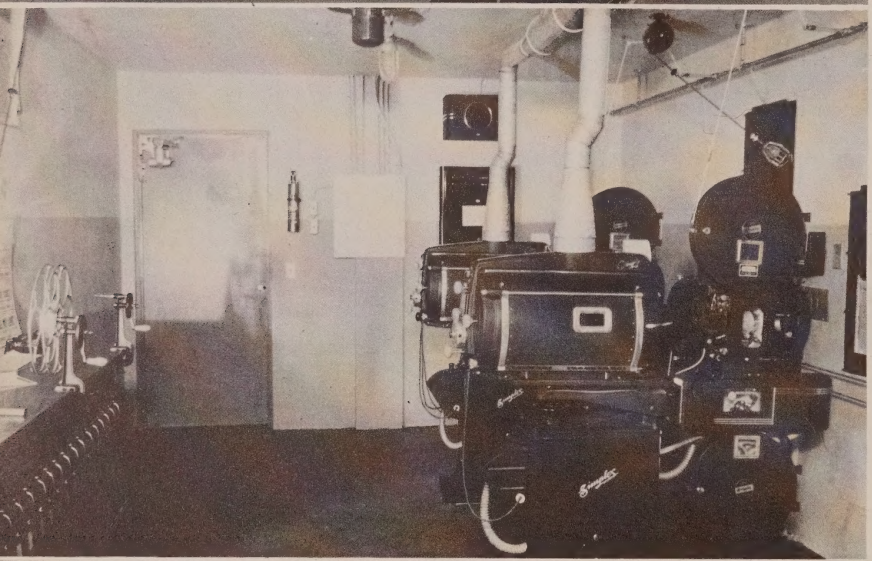
PROJECTION ROOMS *and* EQUIPMENT INSTALLED IN THEM

Below: **AN UNUSUAL GIANT INSTALLATION** in the Drive-In Theatre, St. Petersburg, Fla., which is part of the Sparks Circuit. A throw of 250 feet to a 60 foot wide white painted plywood screen at an 8 degree above horizontal projection angle requires exceptional equipment. The following are installed: SUPER-SIMPLEX PROJECTORS with E-7 MECHANISM; R.C.A. Photophone SOUND; PEERLESS Hy-Candescent (120-180 amp.) PROJECTION LAMPS; NEUMADE TABLE and CABINETS, and SIMPLEX REWINDERS.

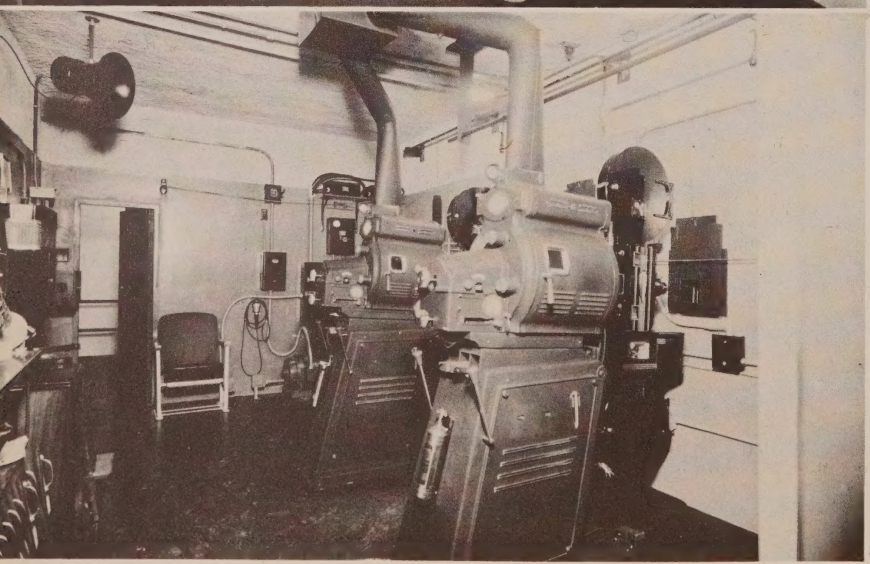




Warner Brothers Rialto Theatre, Pleasantville, N. J. is equipped with: SUPER SIMPLEX PROJECTORS; R.C.A. Photophone SOUND; Ashcraft CYCLEX PROJECTION LAMPS; THEID CHANGEOVERS; BEST PORTHOLE SHUTTERS; and SENTRY SAFETY CONTROLS.

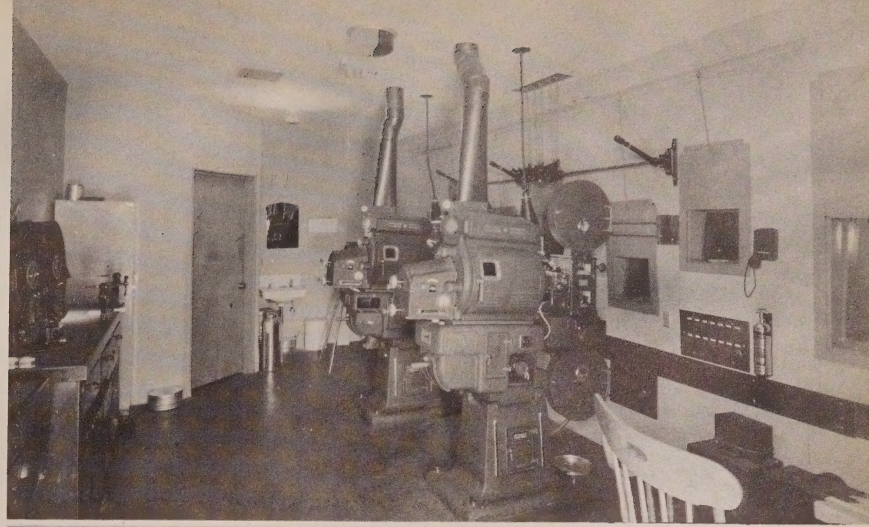


The Westville Theatre, New Haven, Conn. boasts of: SUPER SIMPLEX Front and Rear Shutter PROJECTORS; R.C.A. Photophone SOUND; SIMPLEX HI PROJECTION LAMPS; SIMPLEX LL-3 BASES; STRONG ZIPPER CHANGEOVERS; BAUSCH & LOMB Series 2 LENSES; NEUMADE TABLE and CABINETS; HERTNER Transverter GENERATORS; GOLDBERG Automatic REWINDER; GRISWOLD SPLICER; SIMPLEX Hand REWINDERS; and BEST PORTHOLE SHUTTERS.

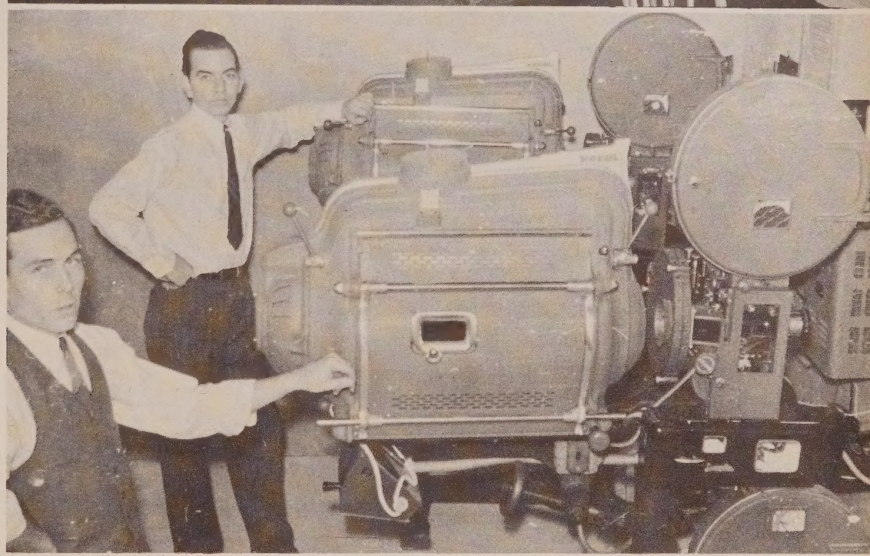


The Kentucky Theatre, Latonia, Ky. is equipped with: BRENKERT BX-80 PROJECTORS; R.C.A. Photophone SOUND; BRENKERT Enarc PROJECTION LAMPS; BRENKERT BX-10 Heavy Duty BASES; ROBIN-IMPERIAL GENERATORS; and a NEUMADE TABLE and CABINETS.

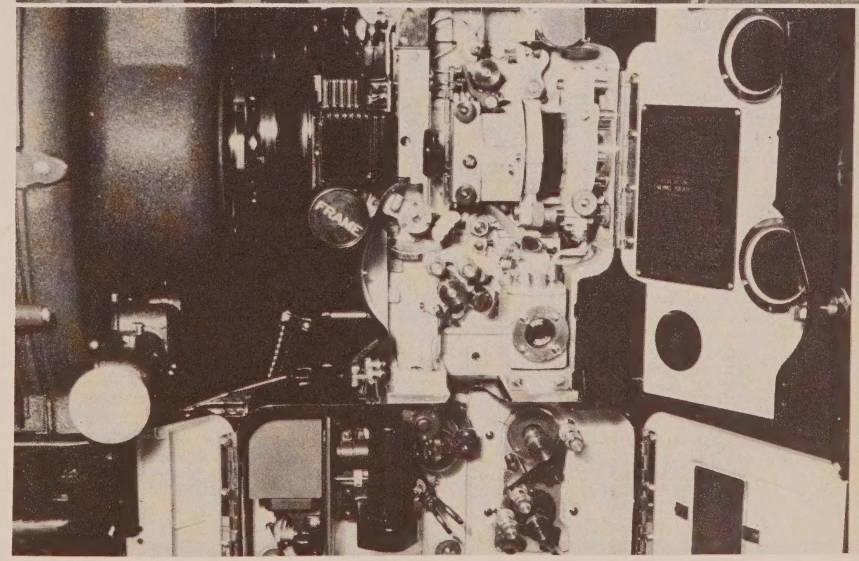
The Campus Theatre, Los Angeles, Calif. was completely equipped by B. F. Shearer Company with: MOTIOGRAPH PROJECTORS; MOTIOGRAPH Mirrophonic SOUND. BRENKERT Enarc PROJECTION LAMPS; MOTIOGRAPH Heavy Duty BASES; BENWOOD-LINZE RECTIFIERS; GOLDBERG Automatic REWINDS; NEUMADE Hand REWINDS; and WEAVER CHANGEOVERS.

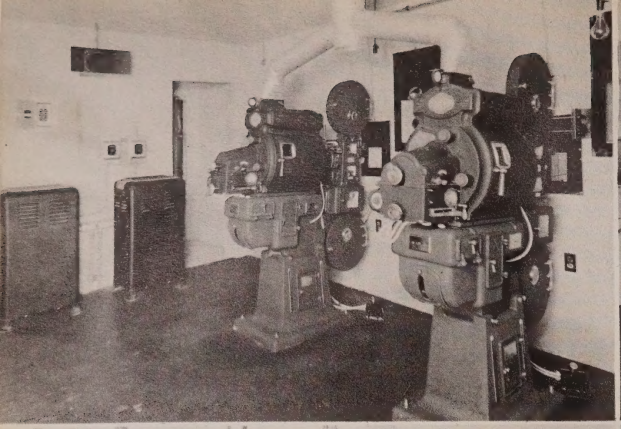


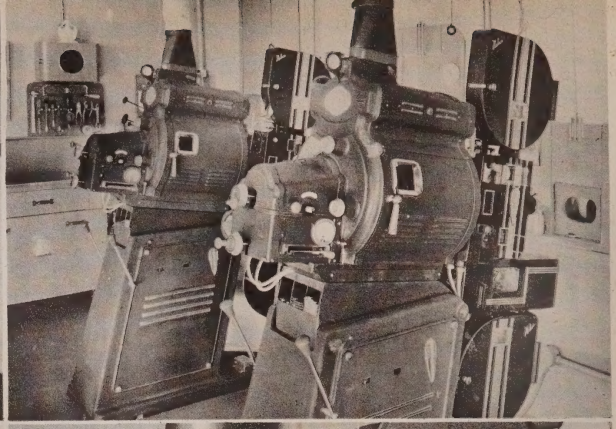
The Wayne Theatre, Goldsboro, N. C. had new equipment installed by Standard Theatre Supply Company, Greensboro, N. C. consisting of: WENZEL Ace PROJECTORS; SYNCROFILM Syncro-Magnetic SOUND; STRONG Mogul PROJECTION LAMPS; OPERADIO AMPLIFIERS; GARDINER BASES; BAUSCH & LOMB Coated LENSES and BEST PORTHOLE SHUTTERS.

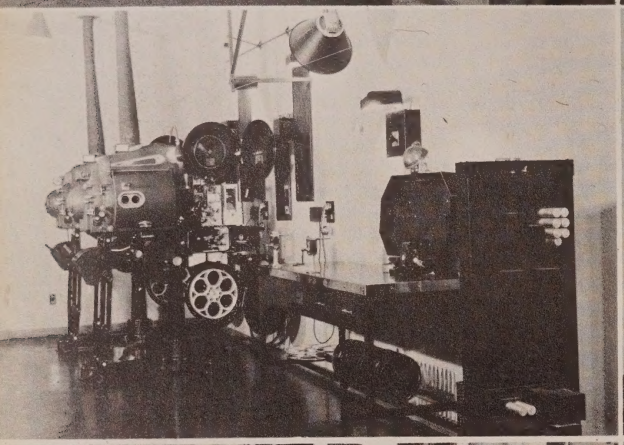


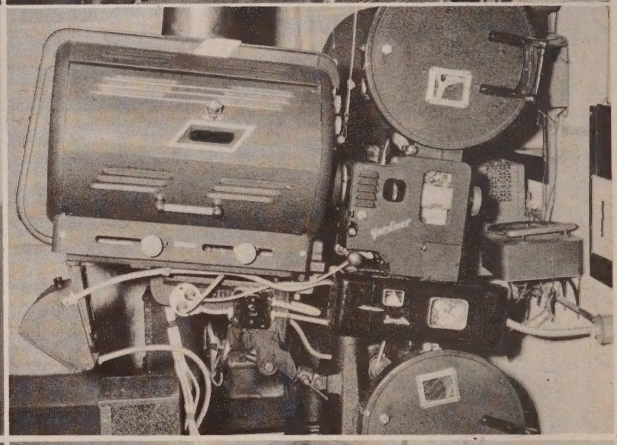
A close-up of a PROJECTION HEAD (upper) and a SOUND HEAD (lower) with both doors open. Some idea of the careful precision in manufacturing and the knowledge and attention necessary to proper operating can be learned from this view. Installation of SIMPLEX E-7 PROJECTORS and SIMPLEX 4 Star SOUND in the Byrd Theatre, Philadelphia, Pa.

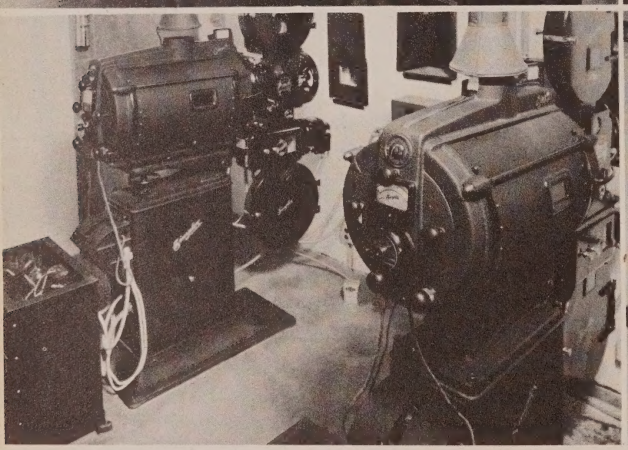


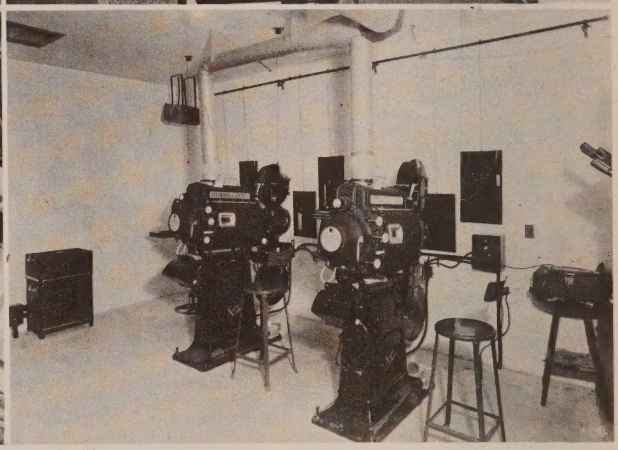












TOP: The Luciann Theatre, Memphis, Tenn. was equipped by Monarch Theatre Supply Co. with: MOTIOGRAPH Model K PROJECTORS; MOTIOGRAPH Mirrophonic Model M-12 SOUND; BRENKERT Enarc PROJECTION LAMPS; BENTWOOD LINZE RECTIFIERS; THEID CHANGE-OVERS; MOTIOGRAPH BASES; DEVRY Brilliant LENSES and BEST PORTHOLE SHUTTERS. Interstate Theatre Circuit's Alabama Theatre, Houston, Tex. boasts of: BRENKERT BX-80 PROJECTORS; R.C.A. Photophone SOUND; BRENKERT Enarc PROJECTION LAMPS; BRENKERT BX-10 BASES; ROTH GENERATORS; NELSON MAGAZINES; BEST PORTHOLE SHUTTERS; and THERMAX PORT BAFFLES.

CENTER: A studio projection room at the Warner Brothers Studio, Burbank, Calif. is equipped with: SIMPLEX Regular Rear Shutter PRO-JECTORS; R.C.A. Photophone SOUND; ASHCRAFT Suprex PROJECTION LAMPS; SIMPLEX Five Point BASES; GOLDBERG Automatic RE-WINDS; and WENZEL Hand REWINDS. The Ritz Theatre, High Point, N. C. is equipped with: GARDINER PROJECTORS; WEBER SOUND; BRENKERT Low Intensity PROJECTION LAMPS; and BENWOOD LINZE RECTIFIERS.

BOTTOM: The Nile Theatre, Mitchell, Neb. boasts of: SIMPLEX E-7 PROJECTORS; SIMPLEX Four Star SOUND; SIMPLEX HI PROJECTION LAMPS; SIMPLEX HI RECTIFIERS; SIMPLEX LL-3 BASES; and WEAVER CHANGEOVERS. The Strand Theatre, Ocean City, N. J. is equipped with: SIMPLEX E-7 PROJECTORS; SIMPLEX 4 Star SOUND; PEERLESS Magnarc PROJECTION LAMPS; SUPER SIMPLEX BASES; G. E. Copper Oxide RECTIFIERS; BEST PORTHOLE SHUTTERS; WEAVER CHANGEOVERS; and NEUMADE BOOTH CHAIRS.

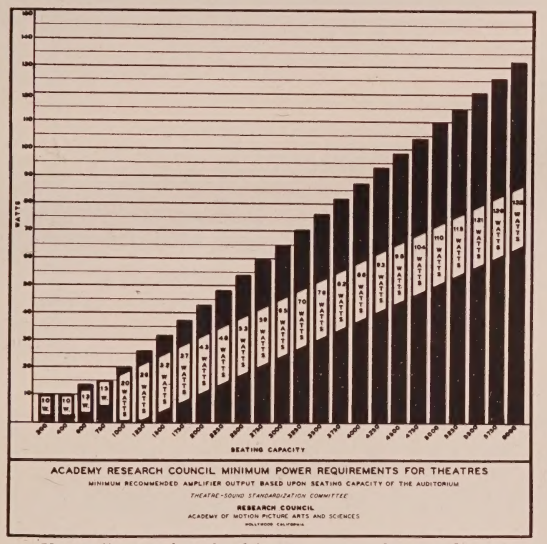
(Continued from Page 210)

also, from a quality standpoint, adequate power is necessary to reproduce dialogue and music at normal levels without harshness and unnaturalness.

As a result of a great deal of study of amplifier power requirements, the Academy Research Council has issued Recommendations on the Minimum Power Requirements for Theatre Sound Systems. These Recommendations indicate the minimum power which should be installed in any theatre in order to give proper reproduction of current sound recording.

In the past, different makes of theatre sound equipment amplifiers have been rated on a different basis. For this reason these minimum power recommendations include the method by which the sound equipment shall be rated. Distortion measurements, maximum total harmonic content, minimum efficiency of the speaker system, etc., are defined. It should be pointed out that the system is rated at the electrical power available to the auditorium speakers. The power consumed by the monitor horn, hard of hearing sets, auxilliary speakers, or by any other part of the equipment except the auditorium speakers is not available as acoustic power, and so is not included in the rating.

We have prepared the chart below which indicates these minimum power requirements.



You will note that the following power for specific seating capacities is required:

Number of Seats		Minimum Power Requirements
Up to	400	10 watts
From	400 – 600	13 "
	601 – 750	15 "
	751 – 1000	20 "
	1001 – 1250	26 "
	1251 – 1500	32 "
	1501 – 1750	37 "
	1751 – 2000	43 "
	2001 – 2250	48 "
	2251 – 2500	53 "
	2501 – 2750	59 "
	2751 " 3000	65 "
	3001 " 3250	70 "
	3251 " 3500	76 "
	3501 – 3750	82 "
	3751 " 4000	88 "
	4001 – 4250	93 "
	4251 " 4500	98 "
	4501 " 4750	104 "
	4751 – 5000	110 "
	5001 " 5250	115 "
	5251 – 5500	121 "
	5501 " 5750	126 "
	5751 " 6000	132 "

It can be easily recognized that the minimum power of 10 watts is entirely within reason. The average modern radio in your home has five watts, and the better sets have 10 to 15 watts of power. You may rest assured that this amount of power would not be available unless it were necessary from a quality standpoint—especially in this day of inexpensive radios where price competition is so important.

We hope that the exhibitors will take advantage of our work and will consult our recommendations when purchasing any equipment so you will receive at least the power recommended for whatever size theatre you are equipping. All of Hollywood's sound is being recorded with these power requirements as a basis and if these recommendations are followed, you will be assured of obtaining the best possible quality from all types of recording. Adequate power as recommended by the Academy Research Council is of definite commercial value to you, as it gives you sound quality comparable to the best available and increases customer enjoyment.

HOW DO ACOUSTICS AFFECT QUALITY?

I might point out one fact which has become very apparent to us since the start of our work—that many theatres encounter difficulties with their sound because of acoustic deficiencies. Our experience indicates that many exhibitors do not realize the necessity of attempting to remedy these acoustic deficiencies rather than to try to get around them by means of electrical adjustment of the sound equipment. Oftentimes, only a few dollars worth of material properly placed in the auditorium or backstage will improve results tremendously—by giving greater sound uniformity throughout the theatre so that the maximum number of seats, regardless of their position in the auditorium, can be utilized with no discomfort to the audience.

Theatre owners often spend considerable money and give lots of thought to the subject of comfort. You work diligently to achieve eye comfort by putting a good picture on the screen. You spend money for good seats and carpets. You maintain clean and well equipped rest rooms and attractive lobbies. But one type of comfort which in our experience we have found to be neglected is ear comfort. If your patrons must strain to hear the sound, or if they are subject to raucous and overloud sound, they will become tired just as rapidly from ear fatigue as from eye fatigue or bodily discomfort. To achieve ear comfort, it may not be necessary to spend lots of money. Poor sound conditions can be corrected very often at small cost, after securing proper technical information and the manner of applying it.

WHY IS IT NECESSARY TO MAKE FADER CHANGES?

Difficulty encountered in setting volume level in many theatres also results from acoustic deficiencies, particularly because of non-uniform distribution of sound throughout the house. This problem is decreased or entirely eliminated with proper sound distribution throughout the auditorium as given by recommended two-way speaker systems which are universally considered to give the best results of any speakers now available.

We have received complaints from time to time from the field stating that some release prints will not run throughout the show on one fader setting. We realize that all of you are concerned with this problem. In the majority of cases, this trouble can be traced either to poor acoustical conditions or to improper sound equipment adjustments. Where an auditorium is highly reverberant in particular frequency bands, for instance, where deep male voices are accentuated, the sound level in such sequences in the reel will appear too loud for other portions of the picture. This will necessitate a fader change in such a house, while in a theatre with proper acoustics the same feature will play throughout on one fader step.

Thus it may be seen that proper acoustics contribute tremendously to the ease and time, such as projectionist and service men's time, required to obtain the best sound quality and the proper volume and tend to maintain the proper sound level at a single fader setting throughout the feature. Here, again, the commercial aspect should be given consideration as poor acoustics lead to complaints at the box office because of poor quality and improper sound level.

HOW DOES THE AUDIENCE AFFECT THE LOUDNESS LEVEL?

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(Continued on Page 223)

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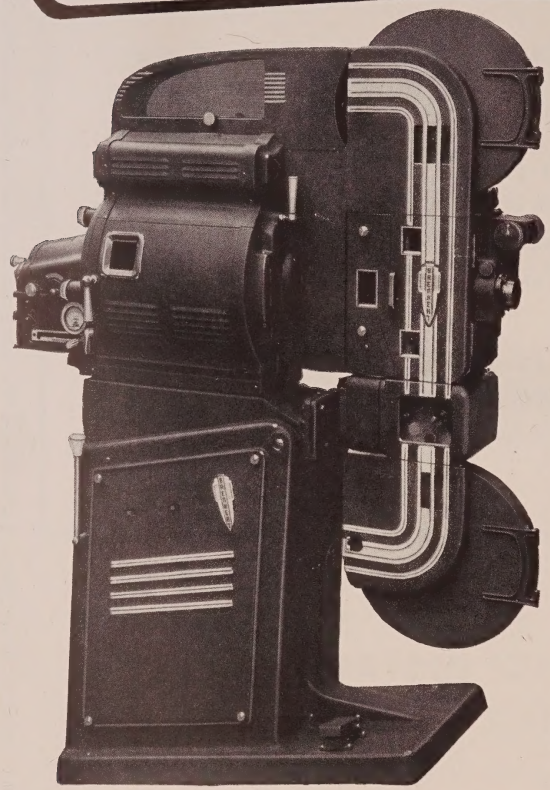

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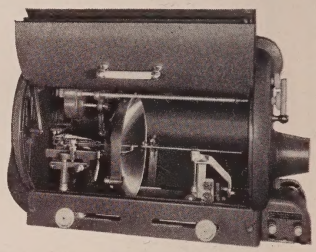

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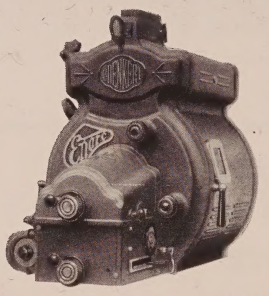

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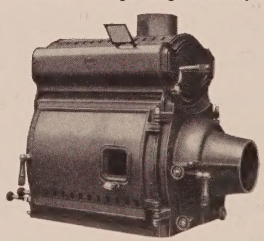

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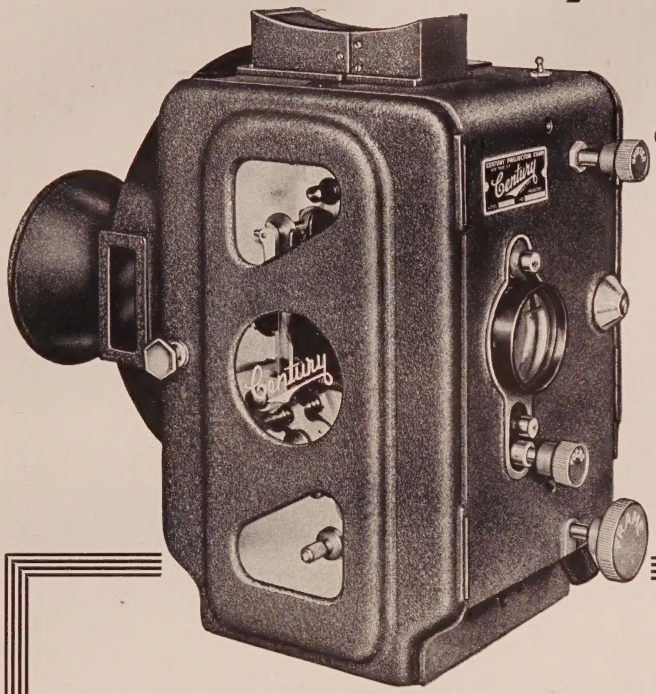

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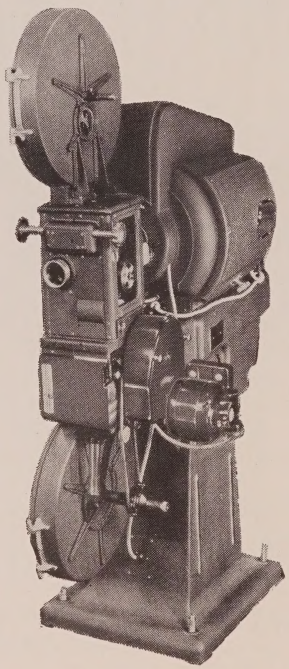

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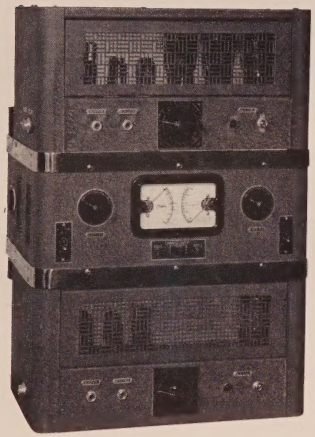

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This amplifier is identical in construction with the Model 350 Dual Amplifier, except that it consists of only one amplifier. It is used by theatre men where Dual Amplifier with its spare unit for emergency use is dispensed with for the sake of saving in initial expense. The reserve amplifier may be added later if desired, thus readily converting this model into a Model 350. Dimensions: 18½ inches wide; 16 inches high; 9½ inches deep.

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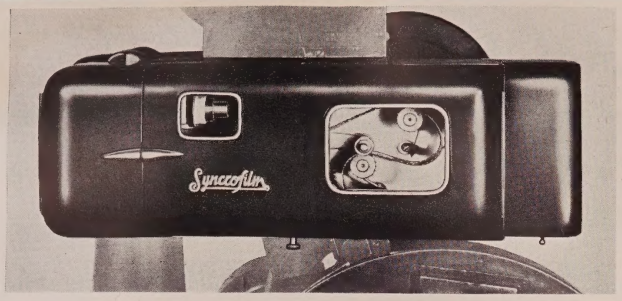

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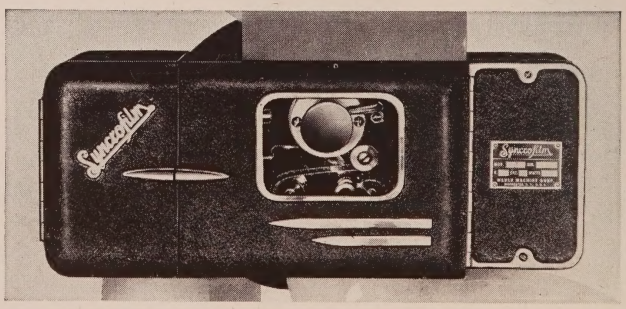


(Continued from Page 215)

power may be required for the same loudness level with a large audience present. In such a case, unless the difficulty is remedied at the source, that is, by proper acoustical treatment of the auditorium, it will be necessary to let experience dictate the manner in which this deficiency should be compensated for. This consequently represents a problem with which the theatre manager must cope.

Concerning the effect of the audience on the installed wattage in the theatre, this fact was considered when the minimum power requirements were prepared. These requirements were based on a series of measurements in a large number of theatres with an average audience in attendance. Consequently, power installed according to these recommendations will be adequate under the most severe audience condition.

WHAT OTHER FACTORS NECESSITATE FADER CHANGES?

A common difficulty leading to fader changes within a single feature is poor regulation of the incoming power supply to the theatre, i. e., the incoming AC line voltage from the power company's supply line varies from time to time. In many instances the change in line voltage is sufficient to vary the acoustic power in the auditorium as much as 400%. It is advisable in all installations where perfect line voltage regulation is not available to install a voltage regulator as part of the sound equipment. This voltage regulator will maintain a constant voltage to the equipment and thus a constant power level in the theatre regardless of wide line voltage variations.

Where there is any question concerning the amount of variation in line voltage, your local power company can determine just how much the voltage varies during the show by connecting a recording type volt meter to the power lines. From the measurements your sound service man can determine what is necessary to correct the condition.

WHERE CAN ADDITIONAL INFORMATION ON SOUND SYSTEMS BE OBTAINED?

This paper is not intended to give a complete list of the technical requirements of a theatre sound reproducing equipment. The intention has been to discuss certain mutual problems and to point out that such information is available upon request from the Academy Research Council. The Council realizes that the exhibitor is always interested in raising the quality of sound in his theatre, and also has realized that one of the Council's functions is to reach the exhibitor with proper technical information and advice. As mentioned previously, a great amount of standardization has been and is taking place through the cooperation of the manufacturing and service organizations with this Committee. In general, the exhibitor has no way to learn of this progress. We are, therefore, endeavoring to set up a more direct contact with all exhibitors, to furnish the exhibitor a source of unbiased technical information on all problems which confront him and upon which he may wish advice. For our part we wish to gain a greater appreciation of the exhibitor's problems. The Academy Research Council feels that in this way a coordination between current sound recording and its reproduction in the theatre may be worked out to mutual advantage.

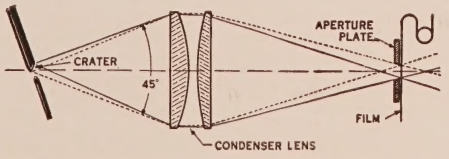
Efficient Application of the Carbon Arc

A real lesson that every theatre executive should learn is contained in this analysis of projection light.

BY W. C. KALB

WITHIN the past year many small theatres have installed new projection lamps, known to the trade as "One Kilowatt" High Intensity arcs. When one sees the brilliancy of the image these lamps project onto the screen, it is hard to realize that all of the light in an 18 foot picture comes from a source only one four-millionth as large as the image on the screen. Yet this is the fact. Naturally, the emission of so much light from an area so small demands precision: first, in the manufacture of the carbons which produce the light; second, in the mechanism of the lamp in which the carbons are operated; and third, in the operation of the lamp by the projectionist. This discussion outlines methods by which most efficient operation of the various types of projection lamps is obtained.

THE optics of projection are such that there is one position of the light source at which optimum screen light is obtained. Movement of the source, in either direction from this position, changes the distribution as well as the total amount of light on the screen. Since the carbons are consumed in operation, it is the function of the automatic feeding mechanism of the lamp to advance both carbons at the rate they are being consumed. In this manner, the electrical conditions at the arc are held constant and the crater face from which the light emanates is kept in a fixed position. The form of the crater face and manner in which the arc stream meets the crater are also factors affecting the amount, quality, and distribution of the light on the screen. It becomes the duty of the projectionist, therefore, to observe the condition of the arc at frequent intervals, and to make such manual adjustments as may be needed to maintain correct current and arc length, proper relation between positive and negative electrode positions, symmetrical positive crater form, and accurate location of the positive crater face.



THE earliest type of projection lamp was the low intensity condenser type, some of which are still in use. In these lamps, the positive carbon is mounted above the negative and the trim slightly inclined from the vertical so as to partially expose the positive crater to the condenser lens. The position of the negative carbon should be so adjusted as to burn the positive at an appreciable angle with the axis of the carbon, thus allowing a greater part of the crater light to be picked up by the lens and projected through the film aperture. This type of lamp is illustrated diagrammatically in Figure 1. The carbon trims commonly used in this lamp are shown in Table I.

TABLE I

Carbon Trims for Condenser Type, D.C., Low Intensity Lamps

Arc Current Amperes	Approximate Arc Volts	Carbon Size and Type
25– 50	51–56	5/8" x 12" Cored Positive 1/2" x 6" "Orotip" Solid or Cored Negative
50– 65	56–59	3/4" x 12" Cored Positive 11/32" x 6" "Orotip" Solid or Cored Negative
65– 70	59–60	7/8" x 12" Cored Positive 11/32" x 6" "Orotip" Solid or Cored Negative
70– 85	60–63	7/8" x 12" Cored Positive 5/8" x 6" "Orotip" Solid or Cored Negative
85–120	63–68	1" x 12" Cored Positive 5/8" x 6" "Orotip" Cored Negative
120–140	68–70	1 1/8" x 12" Cored Positive 1/2" x 6" "Orotip" Cored Negative

IT is important that the carbons be used in the recommended combinations and within the recommended range of arc current for the trim in use. Care on the part of the projectionist is also required in setting the negative carbon at the correct position. If too far forward, a "lip" will form at the tip of the positive carbon and the crater will extend up the side of the carbon, preventing the attainment of full brilliancy. If the negative is too far back, the posi-

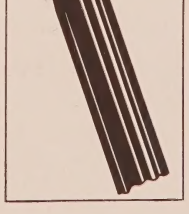


FIG. 1. Optical principle of low intensity condenser type lamp.

FIG. 2. Correct positive crater form in low intensity condenser type lamp.

tive tip will be too blunt and not properly exposed to the condenser lens. Figure 2 shows the correct form of the positive crater obtained with proper setting of the negative carbon.

The arc length should be from ¼″ to ½″ for the range of arc current indicated in the table of carbon trims. Too short an arc causes a "mushroom" tip to develop on the negative carbon and is one cause of arc sputtering. A more frequent cause of sputtering, however, is damp carbons. Carbons of any type should be entirely free from moisture when installed in the lamp. Spindling is caused by operation of the carbons above the recommended current.

SINCE the low intensity arc between neutral cored carbons, when operated on alternating current, is much lower in brilliancy, more yellow, and less steady than on direct current, a special type of carbon was developed for use where direct current is not available and conversion of the A.C. power supply to D.C. not feasible. The core of this carbon contains an arc supporting material which produces a flame like arc stream of pure white color. The condensing lens of the lamp focuses on the film aperture some of the light from this luminous arc stream as well as that from the tip of the upper carbon. The lamp construction is similar to that of the D.C. low intensity lamp except that the lower carbon is usually held in a vertical position with the upper inclined about 20° back of the vertical to expose the crater face. Operating precautions are similar to those mentioned for the D.C. low intensity lamp except that the arc length should be much shorter on alternating current, about $\frac{1}{16}$″ to ⅛″ at the nearest point. Between reels, the arc length should be increased for a short time to burn off the "lip" which tends to form on the carbon tip and maintain a V-shaped gap between the faces of the upper and lower carbons. The trims commonly used in these lamps are shown in Table II.

TABLE II

White Flame Carbon Combinations for Condenser Type, A.C., Low Intensity Lamps

Arc Current Amperes	Approximate Arc Volts	Carbon Size and Type
25– 40	25–28	½″ x 12″ Upper ½″ x 6″ Lower
40– 60	28–32	⅝″ x 12″ Upper ⅝″ x 6″ Lower
60– 75	32–35	¾″ x 12″ Upper ¾″ x 6″ Lower
75–100	35–40	⅞″ x 12″ Upper ⅞″ x 6″ Lower

A very substantial increase in efficiency in the use of the D.C. low intensity arc for projection was achieved by the development of the reflecting type projection lamp, the principle of which is illustrated in Figure 3. The carbons are mounted co-axially in a horizontal position with the crater of the positive carbon facing a

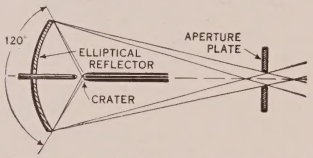


FIG. 3. Optical principle of reflecting type projection lamp.

concave mirror of elliptical contour. This mirror collects and focuses at the film aperture a much larger proportion of the total crater light than the condenser lens used in the earlier types of projection lamps. The carbon trims in most general use are shown in Table III.

TABLE III

Carbon Trims for Reflecting Type, D.C., Low Intensity Lamps

Arc Current Amperes	Approximate Arc Volts	Carbon Size and Trim
16–20	54–57	10 mm x 8″ Regular Cored Positive 7 mm x 8″ Regular Solid Negative
21–25	54–57	12 mm x 8″ Regular Cored Positive 8 mm x 8″ Regular Solid or Cored Negative
26–30	54–57	13 mm x 8″ Regular Cored Positive 9 mm x 8″ Regular Cored Negative
28–32	54–57	12 mm x 8″ SRA Cored Positive 8 mm x 8″ SRA Cored Negative
32–42	54–57	13 mm x 8″ SRA Cored Positive 8 mm x 8″ SRA Cored Negative

WHEN operated within the recommended current range for the trim in use, the reflecting type lamp provides the most efficient source of projection light obtainable with the low intensity carbon arc. Operation below the recommended arc current reduces the efficiency of light production and gives unsteady light while excess current makes the arc unstable and causes spindling of the electrodes. The axis of the negative carbon should be slightly lower than that of the positive to maintain the positive crater face in a plane perpendicular to the optical axis. The ventilation of the lamp should be so adjusted that air drafts disturbing to the steadiness of the arc are avoided.

THE crater of the positive carbon in the low intensity reflecting arc is of fairly uniform brilliancy, as may be seen from Figure 4. That portion of the crater face which corresponds to the width of the film aperture at 6:1 magnification is indicated in this figure.

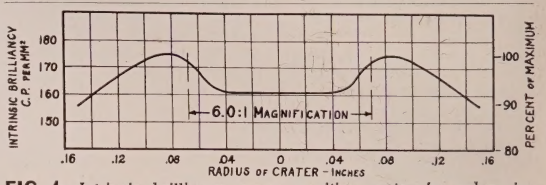


FIG. 4. Intrinsic brilliancy across positive crater face—low intensity reflecting arc.

While there is one position at which optimum screen light is obtained, the flatness of the crater brilliancy curve gives appreciable latitude to the position of the positive carbon without serious loss in quantity or quality of screen illumination. This fact, however, does not warrant neglect on the part of the projectionist in maintaining the positive crater close to the position indicated on the arc image card of the lamp.

DESPITE the advantage of simplicity of operation, the low intensity reflecting arc has two serious short comings from the viewpoint of present day projection requirements. These are quality of light and total volume of screen light available. The light from the low intensity arc, even at maximum brilliancy, is somewhat yellowish. While not a serious drawback for black and white projection, this yellow quality prevents accurate reproduction of color features which, for theatrical use, are processed for projection with the snow-white light of the high intensity arc. Furthermore, the optics of projection place certain limitations on the size of the light source which can be effectively used. When these limits are reached, for a given optical system, there is no way to obtain more screen light except by increasing the brilliancy of the source. The low intensity carbon arc is inherently limited to a brilliancy of about 175 cp/mm² by the vaporizing temperature of carbon. When this maximum brilliancy is attained over as large an area of the crater as the optical system will utilize, the full possibilities of the low intensity arc are realized. More light can be produced *at the arc* by using a larger positive and sufficient current to establish maximum brilliancy over the larger crater, but this extra light will not reach the screen. It will be stopped by the aperture plate if the same magnification ratio is used. Reducing the magnification ratio to bring the larger crater image down to the size of the aperture either reduces the angle of light picked up or increases the angle at which the light is projected through the aperture. In neither case will any increase in screen light be obtained.

FORTUNATELY, there is another type of arc capable of being operated at a much higher intrinsic brilliancy than the low intensity arc and possessing the further advantage of producing a light of snow white color. This is the high intensity carbon arc. By using certain rare earth materials in the core of the positive carbon or, in the case of the A.C. high intensity arc, in the cores of both carbons, and by maintaining the relative position of the two carbons within rather sharply defined limits, the crater face assumes a cup-like form within which the vapors of carbon and core material appear to be restrained and raised to a temperature much higher than the boiling point of carbon. The result is a light of great brilliancy. Brilliancies from 500 to as high as 1200 cp/mm² are attained.

THE original high intensity projection lamps were of the condenser type, and this type is still used in the largest theatres. The improved condenser assembly of these lamps picks up a light cone of approximately 90° spread, about twice the spread of the light cone picked up by the old low intensity condenser type lamps. The positive carbon is mounted in a horizontal position with its crater facing the condensing lens and is rotated during operation to preserve a symmetrical crater form. The negative is inclined to the positive and its position relative to the positive crater face has much to do with obtaining optimum performance. Figure 5 shows the correct relative positions of positive and negative carbons with the flame from the negative carbon just touching the lower edge of the positive crater. The position of both positive and negative carbons should be watched by the projectionist and held close to the point

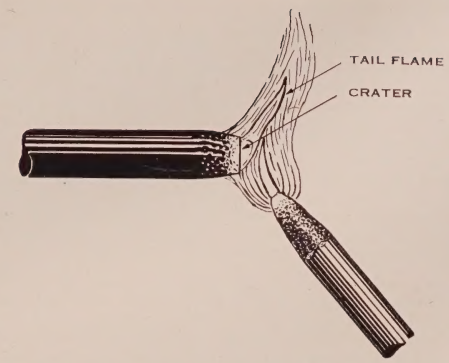


FIG. 5. Position of carbons in D.C., condenser type high intensity arc.

indicated by the gauge pin or arc image card. Reflecting type high intensity lamps with rotating positive carbon have also been produced and precautions similar to the foregoing should be observed in their operation. In these reflecting type lamps the inclination of the negative carbon from the axis of the positive is usually much less than in condenser type lamps.

EXTENSION of the field of the high intensity arc to theatres of small and intermediate size was accomplished by the development of small diameter, copper coated, high intensity carbons known as "Suprex" carbons. The lamps in which these carbons are used are of the reflecting type and, since the small diameter, copper coated carbons do not require rotation, these lamps are considerably simpler in design than the original condenser and reflecting type lamps in which the positive carbon is rotated.

The carbons are mounted in co-axial relation with the negative axis slightly lower than the positive. This co-axial relation eliminates the directional effect which inclination of the negative carbon gives to the magnetic flux surrounding the arc. As a result, the tail flame spreads out more or less uniformly around the positive, as shown in Figure 6. The position of this tail flame is easily disturbed by drafts or other lamp conditions, causing the crater to

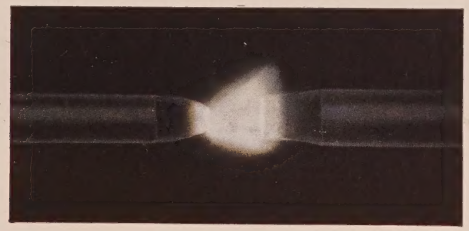


FIG. 6. Suprex type arc without supplementary magnetic field.

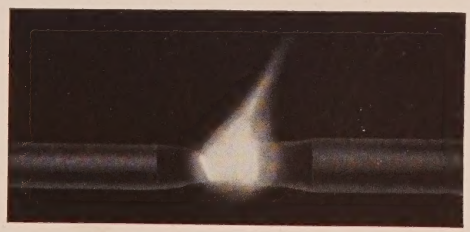


FIG. 7. Suprex type arc with supplementary magnetic field.

burn off on one side and the arc to become unsteady. Suprex type lamps are provided with a supplementary magnetic field which drives the tail flame upward, as shown in Figure 7, giving stability to the crater form and steady light output. It is important that this magnetic field be maintained.

THE development of a new negative carbon which permits operation of the high intensity arc at lower voltage than was previously practicable has resulted in the production of the "One Kilowatt" high intensity arcs referred to in the opening paragraph of this discussion. These lamps are similar in design and performance to the Suprex type lamps. With this latest development, snow-white projection light and a high level of screen illumination have been made available to theatres of every size, from the smallest neighborhood house to the largest downtown theatre. The greatest stability of performance, as well as higher efficiency, is obtained with Suprex type lamps and "One Kilowatt" arcs by using a power supply of not more than 60 volts. The improved stability so obtained is especially marked when operating in the lower portion of the recommended current range.

The carbon trims in most general use in the various types of high intensity projection lamps are shown in Table IV.

TABLE IV

Carbon Trims for High Intensity Carbon Arc Lamps

Type of Lamp	Arc Current Amperes	Approximate Arc Volts	Carbon Size and Trim
D.C., High Intensity with Rotating Positive	60– 85	48–58	9 mm x 20" High Low, White Flame Positive $\frac{5}{16}$" x 6" or 9" "Orotip" Cored Negative
	120–130	67–69	13.6 mm x 22" High Intensity, White Flame Positive $\frac{3}{8}$" or $\frac{11}{16}$" x 9" "Orotip" Cored Negative
D.C., High Intensity with Non-Rotating Positive	40	27.5	7 mm x 12" or 14" "Suprex" Cored Positive 6 mm x 9" "Orotip" Cored Negative
	42– 50	31–40	7 mm x 12" or 14" "Suprex" Cored Positive 6 mm x 9" "Suprex" Cored Negative
	56– 65	31–40	8 mm x 12" or 14" "Suprex" Cored Positive 6.5 or 7 mm x 9" "Suprex" Cored Negative
A.C., High Intensity, 60 Cycle	75– 80	24–29	8 mm x 12" C.C., A.C. High Intensity in both holders
A.C., High Intensity, 96 Cycle	58– 60	21–21.5	7 mm x 12" or 14" "Suprex" Cored Positive in both holders

THE distribution of light over the motion-picture screen is, to a certain extent, a function of the distribution of intrinsic brilliancy over the crater face of the carbon. However, the screen light distribution is also affected by the characteristics of the optical system and by the position of the carbon crater in relation to the optical focus. It is not essential, nor even desirable, that the intensity of illumination at the sides of the screen be as high as that at the center. On the other hand, the adjustment of optical system and carbon position which gives the greatest total volume of screen light may give too much contrast between the brightness at the sides of the screen and that at the center, with the possibility of some discoloration at the corners. The optimum condition of high total volume and acceptable uniformity in screen light is obtained in most lamps when the brightness at the sides of the screen is not more than 80 per cent of that at the center and color quality uniform over the entire screen.

IT has been pointed out that, with a relatively flat field of brilliancy over the crater face, as shown for the low intensity arc in Figure 4, there is considerable latitude of position within which

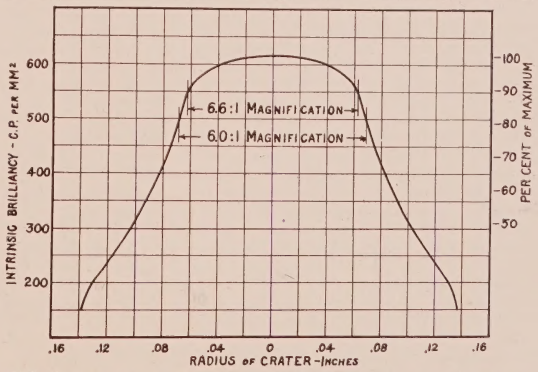


FIG. 8. Intrinsic brilliancy across Positive crater face—high intensity arc.

W. C. Kalb graduated from Ohio State University with the degree of M.E. in E.E., and has spent 32 years since then in the carbon business. He worked for a time with the Corliss Carbon Co., Bradford, Pa., and the remainder with the National Carbon Co., Inc., where he is now Commercial Engineer. His experience with carbon products has included research, development, production, sales, and administrative work. He is a Fellow of the American Institute of Electrical Engineers, secretary and past chairman of the AIEE Committee on Electrochemistry and Electrometallurgy, member of the AIEE Committee on Production and Application of Light, and past-chairman of the AIEE's Cleveland section. He has also published numerous articles in technical periodicals dealing with various phases of carbon arc lighting, carbon brushes, and commutation.

acceptable distribution and quality of screen light is obtained. In the high intensity arc, however, there is less uniformity in brilliancy across the crater face than is found in the low intensity arc. This is shown for a typical high intensity carbon in Figure 8 which represents the intrinsic brilliancy across the crater face of the 8 mm "Suprex" positive carbon operated at 65 amperes. Those portions of the crater face which correspond to the width of the film aperture at 6.0:1 and at 6.6:1 magnification are indicated. With a magnification of 6.0:1 at the aperture plate that portion of the crater face focused at the sides of the aperture is 80 per cent as brilliant as the center if the crater is at the exact focus and center of the optical system. Optical effects increase this contrast and a slight variation from exact alignment or longitudinal position of the positive carbon results in still greater inequality of light distribution on the screen. For this reason most lamps designed for use with this carbon have a magnification ratio of 6.6:1. This allows some latitude in the position of the positive crater without introducing serious inequality in screen light distribution or color.

THE allowable latitude of crater position is much less with these small diameter high intensity carbons than it is with the low intensity reflecting arc or with the 13.6 mm. positive used in condenser type high intensity lamps. Consequently, the projectionist may need to use more care than is required by other types of trims in keeping the feeding mechanism of the lamp adjusted to the burning rate of the carbons and the positive crater accurately centered at the indicated position. This, however, is a small price to pay for the exceptional economy and light producing efficiency which these simplified high intensity lamps provide and for the opportunity offered the owner of the smallest theatre to put the quality of his projection and screen illumination on a par with the highest standards of the industry.

The Use Life of Your Projector

is governed by the care and attention you give it.

BY LESTER B. ISAAC

HAVING been requested to be as "factual" as possible regarding the "factors that influence the life of a projector" I find the subject definitely controversial. Opinions will widely differ regarding the "facts" and I can simply express my own views based upon my experience as the head of the Visual and Sound Projection Department of Loew's Theatres. I have been with the company 25 years and have held my present position for the past 15 years. Although we have hundreds of theatres in various parts of the United States and throughout the world, our problems are just the same as those of any other theatre owner—we have to run our houses profitably. To do this we have to do a good job in all departments and we try to give our patrons the best possible projection. We have found it pays to install the finest equipment we can buy—that has been Loew's standard for many years. It is a fundamental factor in getting long life from our equipment, keeping down maintenance cost, and giving our audiences the kind of projection that shows profitable results in the box office.

But even with the best equipment we must expect regular repair and replacement of parts. All machines are subject to strains and wear. Any other view would be ridiculous. Care and maintenance are required for any mechanism and we cannot blame either the manufacturers of motion picture equipment or projectionists when something goes wrong with the projector because the owner has not realized that neglect is false economy.

LET us consider very briefly how the projector is made and why. In the first place, we must understand that it is designed to move a delicate and inflammable ribbon of film through the projector at the rate of 90 feet a minute. The intermittent movement stops and starts 24 times a second—millions of times during the year—and absolute registration of every frame as it is changed is essential because any unsteadiness will be magnified and perhaps become an apparent and annoying screen defect. As the shutter revolves, it shuts off the light 48 times a second and must be in perfect synchronization with the intermittent movement to avoid travel ghost. To do this flawlessly, the intermittent movement must be made of the finest materials manufactured to measurements as exact as one-ten-thousandth part of an inch. Automobiles are not made with such accuracy, which is only equalled in the making of fine scientific instruments. There are many parts actuated by the gear train made with varying tolerances, as required, but all holding to extremely exact measurements and, also, of high grade materials. These few facts are probably well known to the readers of this publication and it is perhaps hardly necessary to refer to them. But it will do no harm to give them a little thought before we take up more controversial details.

IN the hundreds of Loew theatres we employ many hundred projectionists and, of course, we cannot make exact rules and regulations to meet all requirements. There are, however, certain adjustments and other work which are the projectionists' responsibility but we keep mechanisms in such good condition that repairs in the projection room are reduced to a minimum. Some work requires highly specialized skill and expensive tools and it is too much of a gamble to ask that certain repairs be made in the projection room under unsatisfactory conditions. I cannot here make a general rule as to just what repairs the projectionist should make. It is a subject so controversial I would not express my views without knowing all the details about each case brought to my attention for a decision. Conditions are never exactly the same in any two theatres. In one theatre, there may be the very latest equipment, kept in first class condition at all times by projectionists encouraged by their "boss" who believes it pays to give his patrons good projection. Such a "boss" takes a real interest in his men and shows it by meeting all reasonable demands for repairs and replacement. On the other hand, there are owners who are totally indifferent to the needs of the projection room and, of course, in such instances the sound and visual projection will be inferior. Patrons now know the difference between good and bad projection. If the theatre owner is a real showman he will want to give his audience all possible enjoyment and he will find that it pays. I have endeavored to show that good judgment is a factor to be considered and this must be based upon experience, and willingness to give patrons greatest entertainment value for their money. This cannot be done if the visual and sound projection are unsatisfactory.

IT is almost impossible to be specific about "factors that influence the life of a projector" without being argumentative. Some theatre owners, fortunately a limited number, think a mechanism never needs a general overhauling. All repairs and replacements are made reluctantly and parts are not bought from the original manufacturer of the equipment. Anything will do if a little money can be saved. Well, that is

Lester Isaac, director of projection and sound for Loew's theatres, celebrated his 25th anniversary with the circuit in February, 1941. His first job was with Loew's, Washington, where he remained for more than 10 years before moving over to New York 14 years ago. Under his supervision are 76 houses in New York's metropolitan area; 55 out of town; and approximately 30 theatres in foreign lands. He doesn't go in for sports, but is active in engineering organizations (Society of Motion Picture Engineers, etc.). He lives on Manhattan's West End Avenue.

not very wise, for wear on one part starts up a chain of wear and a cheap part is very apt to be an inferior part, unsatisfactory in the first place, and soon wears out. Before it is replaced, a lot of damage may be done to other parts. Some exhibitors think once every two years is about right for a general factory overhauling. Some think the job should be done every six months. And this is where we differ, for Loew's sends every mechanism back to the manufacturer for a general overhauling once a year. Our requirements are that the job shall be well done. We keep a supply of extra mechanisms on hand, each one in perfect condition, and these are used to make an exchange with the mechanisms in use in the theatres. This is a fixed policy of Loew's and the swap is automatically made every 12 months. We have had this system in operation many years, and experience has shown that it is the most economical method in the long run. We know it pays. It relieves the manager of a lot of worry, encourages the projectionist to do better work, and certainly gives the patron a better show for his money. The box office also shows increased profits through keeping our equipment in good condition at all times. Independently owned theatres should certainly have a third projector, or an extra mechanism. The third projector has certain very definite advantages, and the extra mechanism is an assurance against trouble, and a great help in an emergency.

LIMITATIONS of space make it impossible to adequately cover the daily, weekly, and monthly duties of the projectionist in order to prolong the life of the projector. That would take a good-sized textbook and then the job would not be done properly. Common sense, experience, natural skill, and conscientiousness, the things that make one man better than another, cannot be taken from a book. There are, however, some things that can be learned by reading and the average of competency increased. Strictly speaking, the competent projectionist is on duty every minute, every second he is in the projection room. He is watching, listening, planning, prepared for emergencies no matter what else he may seem to be doing—his eye is on the picture, his ear constantly on the sound. He does that naturally; he just can't help doing it. But he should be encouraged by giving him up-to-date equipment, or the "boss" should at least see that older equipment is kept in a good state of repair at all times. Emergencies through neglect should be reduced to an absolute minimum.

OF course, the good projectionist will do his part to see that that job is done in the right way, and he almost "sweats blood" when anything goes seriously wrong with the picture on the screen. Systematic cleaning, care, and adjustment are required to keep even the best equipment in the right condition. There should be a daily cleaning of the film trap, rollers in the fire trap, sprockets and idlers; picture lenses or reflectors will require daily cleaning and sometimes oftener than this as conditions demand. Tension on the film trap gate in the mechanism should be kept to a minimum at all times to prolong life of the intermittent and tension shoe. Observation of the take-up tension and complete oiling are also daily tasks. Weekly, the picture lens should be taken apart for proper cleaning with lens cleaner and tissue. Of course, this does not apply to new coated lenses. At least once a month there should be a careful inspection for hooked sprockets and worn tracks, and every six months a thorough cleaning and adjustment of the intermittent and a change of oil. Gears and bushings should be checked for wear. These are, of course, things that will vary according to conditions. Common sense and competency, on the part of the projectionist and a sense of fairness to his men and patrons on the part of the owner are "factors" that cannot be set down with exactness. The projectionist loses out by being neglectful and wasteful; the owner loses in more ways than he will ever know if he fails to meet the reasonable demands of his projectionist for repair and replacement and REPLACEMENT IN MANY INSTANCES MAY MEAN COMPLETE NEW SOUND AND VISUAL PROJECTION EQUIPMENT.

OBSOLESCENCE is costing the motion picture industry millions of dollars every year through direct damage to the film and reduction of the entertainment value of the picture. The public, as well as the industry, suffers through the failure of owners and projectionists to keep projection at its best. The penny-wise, pound-foolish policy is a costly one. It is a policy that should be carefully controlled when considering the factors that prolong the life of a projector. The public has a right to see and hear everything that has been put into the picture. Owners who give less than the best are not playing fair with the public and will lose out in the long run for patrons have formed the habit of going to theatres where visual and sound projection are what they ought to be.

The following lines, from an advertisement published in 1922, and before the days of sound, are especially interesting today in view of the tremendous strides motion picture projection has made in the last 18 years. As a doctrine of the responsibility of the projectionist, they merit the attention of all industryites as well—and rank with Joseph Schenck's classic reference to good pictures as a cure for all evils:

"The motion picture projector is no longer a mere mechanical contrivance, cranked by hand, or made to operate by the simple closing of a switch. The projectionist of today must have an excellent knowledge of mechanics, electricity, and optics, and is in charge of a delicate and complicated mechanism made with scientific accuracy to handle a fragile and inflammable material.

"The projectionist has a great responsibility—for a failure to measure up to the right standards means that all the producer, director, actor, and cinematographer have striven for, loses much of its artistic and commercial value,—the pleasure of the audience is lessened,—the exhibitor is subject to constant and unnecessary expense,—and lives and property are endangered."

Standards of Projection

for the Perfect Theatre represents an experienced engineer's views regarding the ultimate to be accomplished.

BY JAMES FRANK, JR.

THE information furnished herewith is intended to be of assistance to a theatre exhibitor purchasing motion picture projection equipment so that he may, with the least difficulty, determine whether he is making the wisest possible investment. There is a wide variation in conditions which affect the choice of projection equipment. These will be explained in as simple terms as possible.

The principal purpose of a motion picture presentation is to entertain. To accomplish this, an illusion of reality must be created. Any factor that may cause the patron to exert himself physically in viewing the picture or to become distracted to any degree will certainly tend to both destroy the illusion and impair the entertainment value. This effect would be emphasized by the fact that the producer, exhibitor, and patron are paying good money for the entertainment.

A HIGH quality of projected image depends on several factors, including the intensity of the reflected light, the distribution of the light over the screen, the uniformity with which the projected light is reflected by the screen over the entire seating area, the color content of the light, the amount of flicker that is projected, the amount of picture jump which is projected, the sharpness of the focus over the entire image, and miscellaneous other distortions.

The principal "recommended practice" which has been approved by the Society of Motion Picture Engineers in connection with projection has to do with the amount of light which is reflected by the screen. It has been determined that this light at the center of the screen should be 10 foot-lamberts, minus one, plus four (that is between nine and 14 foot-lamberts). The most often used term in connection with light intensity is foot-candle, which is the amount of light falling upon an area of one square foot of reflected surface placed one foot from an ordinary candle. The incident light is the light which is actually projected through the porthole of the projection room onto the screen, whereas the reflected light is the light reflected by the screen. After the equipment has once been adjusted, it is presumed that the incident light will not be varied to any large extent whereas the reflected light depends entirely upon the efficiency of the screen at any particular time which may vary considerably. Incident light is measured in foot-candles and reflected light in foot-lamberts. Thus, the efficiency of the screen must be maintained within suitable limits so that under all conditions the minimum reflected light is approximately 10 foot-lamberts. In addition to this recommended practice of the Society, all of the other factors mentioned above should be within a tolerable range in accordance with standard practice.

THE MOTION PICTURE SCREEN

THERE are a number of links in the chain which make up a motion picture projection system. These consist of:-

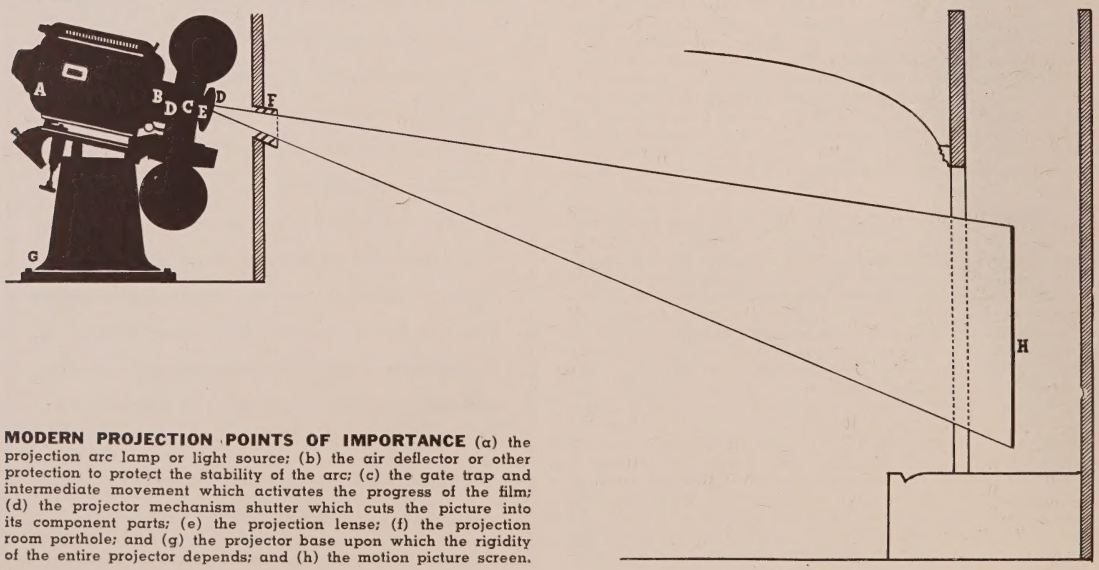
1) The Motion Picture Screen
2) The Projection Room Port
3) The Projection Lens
4) The Projector Mechanism Shutter
5) The Projector Mechanism Gate and Trap, and Intermittent Movement
6) Air Deflector (if any)
7) Light Source

THERE are two essential types of screen used in motion picture theatres. The more widely used one is the white diffusive screen which attempts to reflect the light as uniformly as possible over a very wide horizontal angle, generally up to 60° on either side of the perpendicular. The other is the spectral types, which includes the silver and beaded screens and, for the most part, concentrates about 71% of the reflected light within an angle of 35° on either side of the perpendicular. This type of screen is used exclusively in very narrow theatres. It sharply increases the brilliancy within normal seating limits and, therefore, permits a higher quality of projection from smaller light sources in narrow theatres. Generally speaking, the life of a silver screen is longer than that of a beaded screen as, in the latter case, the beads come off and are excessive dust collectors.

At the present time, there are two distinct classes of diffusive motion picture screens on the market. These consist of a molded contoured and the conventional flat types.

The molded plastic screen recently made available is contoured in a tremendous multiplicity of planes which, it is claimed, materially increases the illusion of depth in the projected image.

(Continued on Page 229)



MODERN PROJECTION POINTS OF IMPORTANCE (a) the projection arc lamp or light source; (b) the air deflector or other protection to protect the stability of the arc; (c) the gate trap and intermediate movement which activates the progress of the film; (d) the projector mechanism shutter which cuts the picture into its component parts; (e) the projection lense; (f) the projection room porthole; and (g) the projector base upon which the rigidity of the entire projector depends; and (h) the motion picture screen.

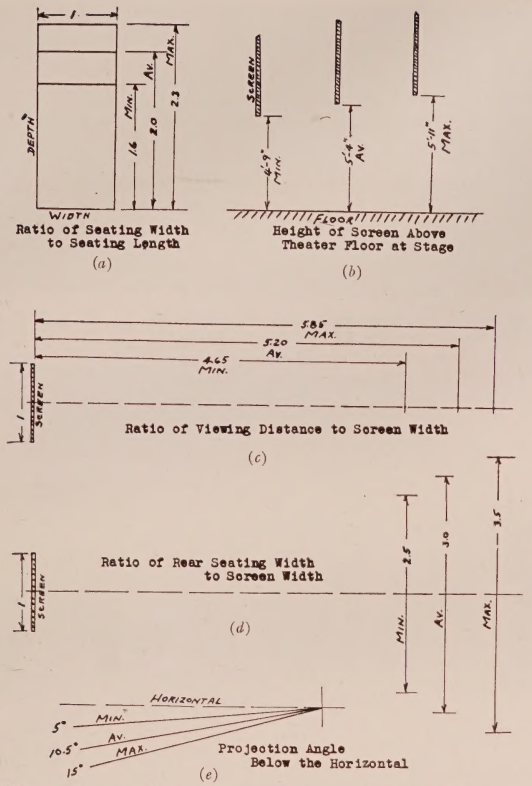


FIG. 9. Characteristics of theatres falling within the 50% group.

THE factors affecting the efficiency of a screen, in terms of life, should be given grave consideration. A screen that is either without seams or with seams that do not collect dust after a short period of time and thus become noticeable to the patron, is desirable. A hard, smooth surface is also desirable since it more easily resists dust. A screen in which the holes are not perforated has many advantages. Where the holes are perforated, after the screen has been coated with its surface, a number of conditions may result. If the cutting tool is exceptionally sharp, a very clean perforation can be made, but it is often possible, after the screen has been in use for sometime, particularly if it should be brushed or resurfaced, for a number of threads to project out into the holes. If the cutting tool is not sharp in the first place, these threads may project out into the holes, even when the screen is new. These threads not only are dust collectors, which in time reduces the efficiency of sound transmission of the screen, but, furthermore, act as wicks. They absorb moisture from the air, which causes them to swell, forcing a breakdown of the screen surface. As soon as this happens, the surface becomes rough, acts as a dust catcher, and deteriorates more rapidly. The screen should also be free from streaks in order to permit a uniformly reflected picture. The best screens available have a characteristic whereby the reflective efficiency depreciates in the neighborhood of 40% in a period of approximately two and a half years, whereas most screens have depreciated by this same amount in approximately one and a half years. The total life of the screens, however, is more or less the same.

Screens are employed under conditions which are not particularly favorable for maintaining a high efficiency for a long period of time. Many theatres employ air-conditioning systems which force a large volume of air through the screen, carrying with it the inherent impurities and smoke from the auditorium which tend to cause rapid deterioration of the screen. The ultra violet rays in the projected light also affect the quality of the screen surface. In many theatres, screens are affected by missiles which are thrown at them by patrons, and the more resistant they are to this, the better. From time to time, the pigments used in the screen surface are varied, which changes the color of the reflected light. These changes are sometimes represented as improving realism but, for the most part, they are misleading. The color of the pigment used should bear a fixed relation to the color of the light source.

AT the present time, there is considerable variation in determining the proper size of screen for a particular theatre. Architects are generally guided by the desire for satisfactory sight lines from the extremities of the seating area. A survey conducted by the Society of Motion Picture Engineers in 1938 in approximately 600 theatres of all types has formed the basis of data showing fairly representative general theatre conditions at the present time. These conditions are to be, by no means, considered ideal but are typical of present average conditions which to exist must be within a tolerable commercial range.

Theatre Survey, Characteristics of Theatres

	Lower Extreme	—50% of the Theatres— Min.	Av.	Max.	Upper Extreme
Ratio max. viewing dist. to screen width	2.60	4.65	5.20	5.85	8.00
Ratio seating length to seating width	0.90	1.52	1.98	2.35	3.50
Ratio rear seating width to screen width	1.00	2.50	3.00	3.50	6.20
Screen width	10′	16′	18′-6″	21′	34′
Distance from floor to bottom of screen	3′-0″	4′-9″	5′-4″	5′-9″	8′-2″
Projection angle	0°	5°	10.5°	15°	35°
Amperes (arc) per sq. ft. of screen surface	0.06	0.16	0.20	0.24	0.44

Figure 9
from Report of the Projection Practice Committee

FROM the above, it can be seen that the purchase of a screen for a motion picture theatre first depends on the shape of the auditorium and, secondly, depends on how much you can afford to pay toward getting the highest efficiency for the longest period of time.

THE PROJECTION ROOM PORT

It is also important that some provision be made for preventing the transmission of noise from the projection room into the auditorium. The Society of Motion Picture Engineers recommends a silencing baffle to be placed in projection ports. This prevents the use of optical glass which at best will become dusty and dirty and consequently distort the projected light beam.

THE PROJECTION LENS

THE prime function of the **projection lens** is to produce an image of maximum fidelity. A new type of six element lens was recently introduced which makes possible a higher quality of projection than heretofore. These new lenses are more efficient due to a new type of surface treatment which minimizes surface reflections and eliminates a haze that has been previously projected along with the image on the motion picture screen. For best results, therefore, these lenses which have a speed of F.2 and have treated surfaces should be employed. F.2 is the fastest speed for projection lenses made available to date, which will, without too much difficulty, fit into the standard 35mm motion picture projectors in use. Consideration of space requirements, however, makes it possible to use these lenses with a focal length in excess of five inches in these mechanisms. The fast speed, with six elements, insures efficient transmission of all light sent through the lens with as uniform distribution of it over the screen as possible. Lenses with four elements of the same speed are also available up to the five inch focal length without surface treatment at a saving in cost. Where a focal length in excess of five inches is

(Continued on Page 234)

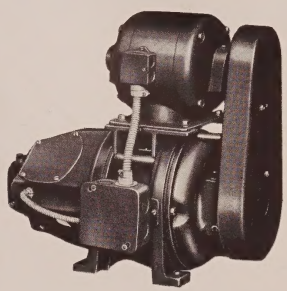
James Frank, Jr., graduated as a bachelor of science in electrical engineering from Yale University. He worked in the Photophone Division of the RCA Manufacturing Co. from 1928 to 1936; as assistant sales manager, International Projector Corp., from 1936 to 1937; in the sales promotion department, National Theatre Supply Company, from 1937 to 1939; and as manager of the NY branch of the National Theatre Supply Company from May, 1939, to the present. He has been secretary of the Society of Motion Picture Engineers since 1937, and is vice-president of Zeta Beta Tau Fraternity.

Cyclex

REG. U.S. PAT. OFF.

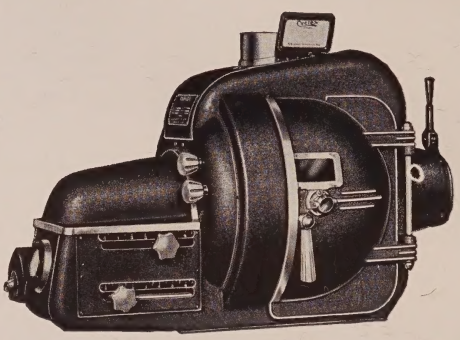
The TRUE One Kilowatt Arc!

BRILLIANT • STEADY • MOST ECONOMICAL



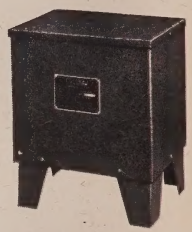
Cyclex Power Unit

This sturdy unit eliminates the necessity of generators or rectifiers—converting alternating current, for use in the arc, which produces a smooth brilliant screen light. One of the most economical and long lived units ever designed for motion-picture projection.



Cyclex Lamp

The Cyclex Lamp is a True One Kilowatt Arc, the light from which is extremely white. Cyclex light is ideal both for black and white or technicolor prints. Structurally the lamp is simple and strong, being equipped with every convenience for easy and efficient operation. **Cyclex light is steadier than that from arcs operated from rectifiers.**



The Cyclex System consists of two lamps, Power Unit and Two Control Units. Due to the simplicity of Cyclex the **installation costs are very low.** There are no tubes to replace, no units to burn out or commutators to turn.

Cyclex REG. U. S. PAT. OFF. USES FEWER CARBONS AND LESS POWER

Cyclex produces more light with a lower carbon and power cost than any other type of projection arc. A pair of carbons will projcet approximately **22,000 feet** of film at a power cost which is about **one-half that required for low intensity operation.**

Cyclex REG. U. S. PAT. OFF. LIGHT IS BRILLIANTLY WHITE

Cyclex is in a class by itself—no finer projection on moderate sized screens is possible with any other type arc. You have a treat in store when you project **Technicolor with Cyclex.**

THE BEST INDEPENDENT DEALER IN YOUR

C. S. ASHCRAFT MFG.

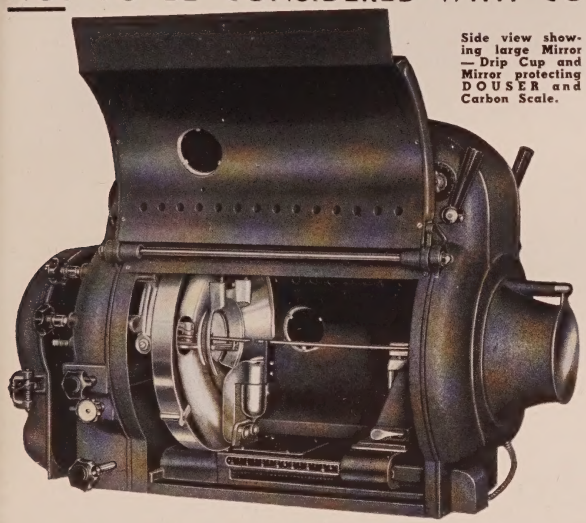
47-31 THIRTY-FIFTH ST.

C. S. ASHCRAFT MFG. CORP.

Suprex SPECIAL

The SPECIALLY DESIGNED Intermediate High!

NOT TO BE CONSIDERED WITH CONVERTED LOW INTENSITY LAMPS

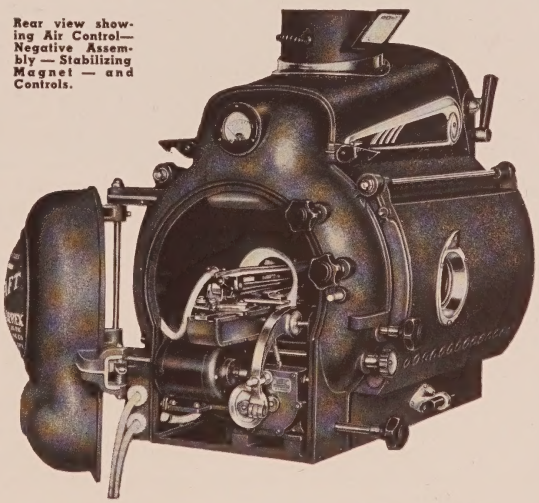


Side view showing large Mirror — Drip Cup and Mirror protecting DOUSER and Carbon Scale.

THE ONLY

Intermediate High lamp, the mechanism and housing of which, was specially designed for **Low Amperage Suprex** and not converted from ordinary Low Intensity Lamps. For this reason the **Ashcraft Suprex Special** (Type "E") may be operated over a wider range—a true Intermediate High for low cost operation in medium and small theatres.

WHY NOT BUY THE BEST?



Rear view showing Air Control—Negative Assembly — Stabilizing Magnet — and Controls.

BE SURE . . .

The Intermediate High Lamp You Buy Has:

- 14 INCH BAUSCH & LOMB REFLECTOR.
- INDEPENDENT FEED FOR BOTH CARBONS.
- FULL COLLAPSING MIRROR PROTECTING DOUSER.
- SEPARATE MECHANISM CHAMBER TO KEEP THE OPERATING PARTS CLEAN AND COOL.

Being a true Suprex lamp the Suprex Special not only operates in the Intermediate range (27 Volts —40 Amperes) but can be used in the normal Suprex range (35 volts up to 50 amperes).

***IF** . . . the lamp you select has all the above features then it is an*

ASHCRAFT SUPREX SPECIAL

No other intermediate high lamp has them all!

TERRITORY SELLS ASHCRAFT PRODUCTS!

CORP. • NEW YORK

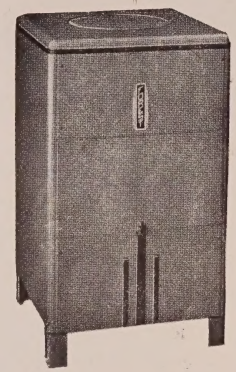
LONG ISLAND CITY

C. S. ASHCRAFT MFG. CORP.

MANG.-EQUIP

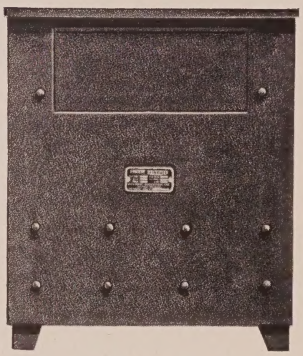
FOREST MANUFACTURING CORP.

FOREST *arc* RECTIFIERS



FOREST *Super* MCS RECTIFIERS

Forest Magnesium-Copper Sulphide Rectifiers with the newly developed Forest transformer, designed and engineered in our laboratories, give definite assurance of protection from line voltage fluctuations. The Super MCS has—reliable 3 phase fan . . . magnetic switches . . . visual 3 phase line indicator . . . automatic voltage regulator . . . housed in a new sturdily built modernistic case—all distinct Forest features. Approved by Underwriters Laboratories. Consult our authorized dealer and obtain the specially prepared brochure giving complete technical data on Forest Super MCS Rectifiers.



LD-60 FOREST

LD-60 Bulb Type Rectifiers have been developed to meet the demand for a reliable, efficient, low cost power conversion device to supply projection arcs. Important new circuits have been developed and Forest rectifiers conform in every way to the standards required for modern projection. Each rectifier serves one lamp and has an output from 30 to 60 amperes for Simplified High Intensity operation. This rectifier, with the Forest Lamp, meets the demand of the smaller theatre where an inexpensive source of white light is required.

RECTIFYING TUBES

Forest Rectifying Tubes are manufactured for use in rectifiers, power supply units and battery chargers of all makes. When used in Forest Rectifiers they are your guarantee of maximum efficiency, reliability of operation and maximum economy. The standards of construction built into Forest Rectifying Tubes are recognized by electrical engineers everywhere. Specify Forest Rectifying Tubes on your next tube purchase.

FOREST MANUFACTU

200 MT. PLEASANT AVENUE

light PRODUCTS

LAMPS and SCREENS

For more than a quarter of a century, Forest Rectifiers have been the leading money-saving power conversion equipment. To meet present day requirements for top projection efficiency, at the least possible cost, Forest Manufacturing Corporation has designed a BALANCED 'ARC-LIGHT' COMBINATION for the motion picture industry.

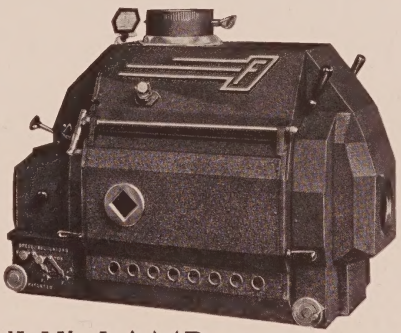
This combination includes the time-proved Forest Bulb-Type and Magnesium-Copper Sulphide Rectifiers, the Forest Projection Lamps and the Forest Sound Screens.

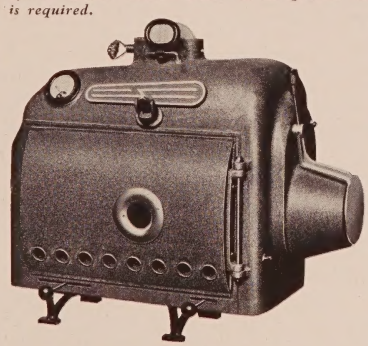
Through this BALANCED 'ARC-LIGHT' COMBINATION, Forest has scientifically achieved the ultimate in screen illumination and has made drastic slashes in operating costs possible.

FOREST LAMPS

This improved projection lamp, developed by Forest, was designed to overcome the technical imperfections in present projection lamps. In the Forest Projection Lamp is featured: an entirely new carbon feed which maintains perfect focus. Does not require the operator's constant attention. . . . Takes any type of carbon trim—5 to 9mm. negative, 6 to 13mm. positive—thus accommodating trims for Suprex or Simplified High Intensity, Low Intensity and all new requirements. . . . Adjustable magnetic arc control permitting greater draught and removal of burnt gases. . . . Full adjustments provided for reflector, carbon guides and holders, independent separate control of positive and negative carbon feeds. . . . Lamp mechanism placed where it cannot be clogged by falling particles of carbon and to ease cleaning. Many other distinctive features are incorporated into the Forest Projection Lamp. These features are discussed in detail in a specially prepared brochure.

This Lamp, with the Forest Bulb-Type rectifier, meets the demand of the smaller theatre where an inexpensive source of white light is required.





FOREST 'I-H' LAMP

The I-H Lamp is the new Intermediate High Intensity product designed, engineered and manufactured by Forest. This lamp is designed especially for those houses where quality projection at Low Intensity costs is desired. A descriptive folder on this new lamp is now on the press. Send for your copy immediately.

FOREST SOUND SCREENS

Designed and manufactured to retain their original surface over a longer period of time. The special Forest Surface-Processing Method eliminates the necessity of increasing the amperage at the arc to obtain increased light. The complete Forest Sound Screen line is: The new "Balanced-Light" Sound Screen, gradationally perforated thus evenly distributing light and sound. . . . The "Super-Quality" Sound Screen manufactured to meet exacting conditions. . . . The "Special" for use in the smaller house. . . . "Beaded" for the low intensity theatre. . . . Forest "Silver" for use wherever this type of sound screen is desired. . . . All Forest Sound Screens are flame-proofed.

RING CORPORATION

NEWARK, NEW JERSEY

(Continued from Page 229)

required, Series II four element or half size lenses are available with surface treatment. The speed of these lenses is somewhat slower than F.2 but they get the best possible results under these conditions. Less expensive lenses of somewhat slower speeds are available of the Series I four element or quarter size type for the smaller focal lengths where it is absolutely essential to minimize costs, but, in so doing, it is at the expense of realism. It is impossible, with the four element lenses, to get as uniform distribution of light as can be achieved with the more expensive lenses.

THE PROJECTION MECHANISM SHUTTER

IT is presumed that the majority of theatre exhibitors have a general understanding of how a motion picture projector functions. A **rotary shutter** is required in order to cut off the projected light while the film is being pulled down by the Intermittent Movements. For mechanical balance, a two blade shutter is utilized. Unfortunately, the use of a shutter materially reduces the intensity of the projected light reaching the screen, due to the fact that the light is entirely cut off for a considerable portion of the time. Nevertheless, this cannot be avoided in an intermittent projector. It is necessary, therefore, that the size of the shutter blade, which controls the time that the projected light is cut off, be minimized. Projector mechanisms utilizing single shutters, which were originally between the projection lens and screen but which when larger, hotter light sources came into use were placed between the arc lamp and the aperture to reduce the heat on the film, require a blade of approximate 90°, which is practically cutting the projected light to the screen in half. The use of a double synchronized shutter, first introduced about two and a half years ago, permits the use of a shutter blade of between 70° to 75°, which increases the effective projected light about 25%. The double shutter also improves the quality of the projected image because in cutting off the light beam it dissolves it (that is it cuts it off at the top and bottom simultaneously) instead of sweeping all the way across it. It is extremely important that the light beam be cut off for the entire period during which the Intermittent Movement is moving the film. This calls for a rather precise adjustment between the shutters and the Intermittent Movement. The relationship between these two devices will vary as the gears in the projector mechanism wear due to back lash in the gear train. The projector mechanism, therefore, must be equipped with a device so that within reasonable limits the relationship between the shutters and Intermittent Movement may be properly adjusted.

The type of distortion which occurs on the screen when improper relationship exists between shutters and Intermittent Movement is known as "travel-ghost". This is most noticeable at the top and bottom of the picture and on titles. Consequently, the use of the double shutter with the dissolving effect would minimize this distortion even if the relationship between the two devices is not correct. The use of too small shutter blades in order to increase the light transmitted is not desirable since it will produce travel-ghost.

INTERMITTENT MOVEMENT, GATE AND TRAP

THE function of the motion picture projector mechanism is to pull the 35mm film past the aperture in an intermittent motion at a rate of 90-feet per minute or twenty-four pictures per second. To accomplish this, the **Intermittent Movement,** through its sprocket, located just below the aperture, pulls the film with type of motion through a gate and trap. In so doing, it is extremely important that while the shutter is open, permitting the light beam to be projected upon the screen, the film must be held firmly in its proper plane. Properly adjusted tension springs and guides in the gate and trap at the aperture are provided for this purpose. Unless this is done, the film might move while the shutter is open and portions of the film might get out of their proper plane and thus affect the sharp focus on the screen. The Intermittent Movement must operate in such a way as to avoid a jerky motion of the film vertically which would cause picture jump on the screen. A leading manufacturer of motion picture projector mechanisms specifies that picture jump for a 9-ft. x 12-ft. projected image should not exceed one quarter inch vertically. Since this entire operation is so extremely delicate, particularly when you consider that a picture whose area is approximately one half square inch is magnified to an average size of about 300 square feet, the projector mechanism must be manufactured with a high degree of accuracy. It should also be kept in mind that these mechanisms operate for 20 minute intervals for periods sometimes up to as much as 18 to 20 hours per day and must maintain their high efficiency over a period of at least two or three years before requiring rebuilding. There are a great many other features in connection with a motion picture projector mechanism which involve minimizing of fire hazard, safeguarding the delicate emulsion on the film, and properly driving all of the various parts of the projector mechanically. Consideration should also be given to the steps that have been taken for insuring maintenance of highest efficiency over a long period of time with a minimum amount of care on the part of the projectionist, as well as provisions for most economic rebuilding when required. There are a number of different classes of motion picture projector mechanisms available for theatres, all of them accomplishing the same function. In most instances, you get exactly what you pay for. Some of the mechanisms are especially designed for small theatres whose operation is limited to a few hours per week (not in excess of 35) and cannot afford deluxe projectors. In all other cases, however, it has been definitely proven that the more expensive deluxe projectors are the best investment for any size theatres from both the point of view of improved quality of the projected image on the screen and maintenance costs.

PEDESTAL

AGAIN, it is worthwhile to consider the fact that the strength of the chain is determined by its weakest link. All of the fine features of the projection room equipment can be rendered valueless or at least seriously depreciated if the apparatus is not properly supported. A **projector pedestal** must be employed that is designed with its center of gravity, when the equipment is mounted on it, adequately supported to prevent vibration and consequent motion of the projected image. In this respect, it should be recognized that during the last 10 years vast changes have been made in the equipment, making it much heavier and distributing the weight in an entirely different manner so that only the modern pedestals can assure proper results. Facilities should also be provided for easy, accurate aligning of the equipment so as to insure highest efficiency and also so that the image can be easily and accurately lined up on the screen.

A CONSIDERABLE amount of heat is created at the projector mechanism aperture when an intense light source is focused thereon. Aside from the fire hazard, it is extremely important that this heat be minimized in order that it should not buckle the film, which would cause the center portion of the film to get out of focus. Different types of cooling devices are employed and in some cases the draft of air required to minimize the heat at the aperture may be such as to affect the stability of the arc at the light source. Under these conditions, it has been found practical to place an **air-deflector** or heat resisting glass between the light source and the rear shutter. While this eliminates any effect on the arc it also reduces the intensity of the light transmitted by the entire system to the extent of approximately 8%. Even at that, high quality heat resisting glass is required. In most instances, it is preferable to take the loss in light rather than have an unstable arc. To a certain extent, it has been found that this air deflector disperses the light in such a way as to distribute the projected light over the screen area more uniformly.

THE LIGHT SOURCE

THE **light source** is, of course, one of the most important factors in connection with projection of motion pictures. It must, first of all, be of an intensity so that sufficient incident light is projected onto the motion picture screen after having passed through the other devices mentioned above and produce reflected light of an intensity of 10 foot-lamberts (minus one, plus four). It must also be of the right color content for suitable realism. Many years of experimental and developmental work have resulted in standardizing on high intensity carbon arc sources in order to achieve both proper intensity and the desired snow-white color. The intensity of the light source, in order to get suitable results, depends mostly on the size of the projected image and is hardly affected by the distance of the projection lens to the screen. The following data may be used as a guide for best determining suitable light sources:-

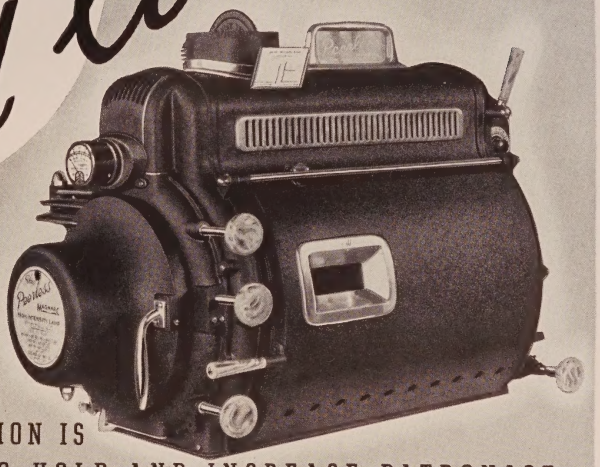
Maximum Screen Size	High Intensity Arc Current	Size of Carbons Positive	Size of Carbons Negative
12 ft. x 16 ft. (192 sq. ft.)	40 amps.	7 mm. x 12 in.	6 mm. x 9 in. Orotip C
15 ft. x 20 ft. (300 sq. ft.)	48 amps.	7 mm. x 12 in.	6 mm. x 9 in.
18 ft. x 24 ft. (432 sq. ft.)	62 amps.	8 mm. x 12 in.	6.5 mm. x 9 in.
21 ft. x 28 ft. (588 sq. ft.)	130 amps.	13.6 mm. x 22 in.	$\frac{7}{16}$ in. x 9 in.
Larger	180 amps.	13.6 mm. x 22 in.	$\frac{7}{16}$ in. x 9 in. D.C.C.

Note:—By using treated projection lenses, and condensers with speeds in excess of F2.3, screen width may be increased about two feet.

An unusual light source which burns low current high intensity carbons from high frequency alternating current with considerable success was introduced about a year ago. Its chief ad-

(Continued on Page 241)

LIGHT UP— ..and live!



HIGH INTENSITY PROJECTION IS NOW INDISPENSABLE TO HOLD AND INCREASE PATRONAGE

● A superior and outstanding quality of projection is required to hold the interest of the highly critical present day audience. Brilliant, Snappy, Snow White Magnarc High Intensity Light adds tremendously to the quality of your picture, be it black and white or color photography.

For the past four years theatres the country over have been modernizing projection with Peerless Magnarcs. Projection is the heart of the picture theatre and the most important place to modernize.

Don't think that high intensity projection is a luxury. It is a necessity. 4000 theatres having 75 per cent of the nation's total seating capacity are already using high intensity projection. Such wide use and immediate adoption must prove that it is the small theatre's only alternative to hold and increase patronage.

Peerless Magnarc Lamps produce 200 to 300 per cent more light on the screen than low intensity lamps, at the same current cost. Peerless Magnarc will modernize your projection and will keep it modern for years to come. It's the finest arc lamp ever built.

Get the facts. Write for new illustrated folder, "Get A Seat On The Bandwagon."

Peerless SIMPLIFIED High Intensity PROJECTION MAGNARC TRADE MARK REG.

MANUFACTURED BY

J. E. McAULEY MFG. CO.

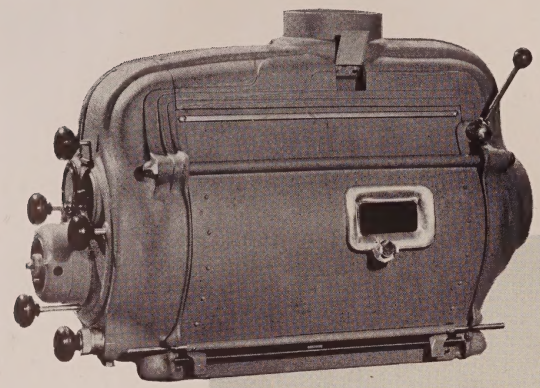
552-554 WEST ADAMS STREET

CHICAGO

SOLD BY ALL BRANCHES OF • NATIONAL THEATRE SUPPLY COMPANY

SERVING THE NATION • SOLD • SERVICED • GUARANTEED

Let Strong Light Your Way to Low Cost High Intensity Projection



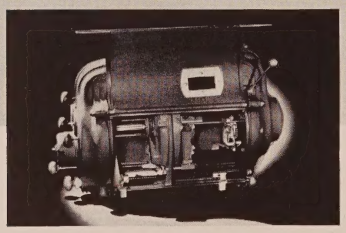
STRONG ELECTRIC CORP.

MODERATE sized theatres have long realized the hopelessness of getting a good picture on the screen with prevailing dense black and white films when using the dim low intensity lamp. Furthermore, satisfactory projection of colored films with the muddy yellow light of the low intensity was just as impossible. And the required brilliancy and sparkling snow-white light of the high intensity arc were denied them by prohibitive operating costs.

It remained for Strong, through the development of the new Utility, a perfectly balanced and coordinated lamp and rectifier unit of intermediate capacity, to solve their problem, to produce a high intensity lamp which exactly filled the needs of the medium sized theatres with screens up to 18 feet in width.

This new Strong lamp projects twice as much light as is possible with any low intensity lamp and at an increased combined current and carbon cost of less than 2c an hour.

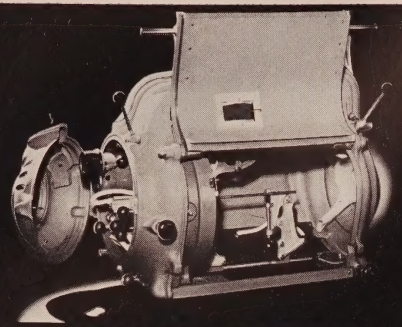
Your leading Independent Theatre Supply Dealer will gladly demonstrate this new marvel of efficiency in your theatre without obligation . . . Call him today.



THE STRONG UTILITY

INTERMEDIATE CAPACITY
HIGH INTENSITY ARC LAMP

THE STRONG ELECTRIC CORPORATION
2501 LAGRANGE STREET · TOLEDO, OHIO
Export Office: Room 2002, 220 W. 42nd Street, New York City



STRONG MOGUL HIGH INTENSITY ARC LAMP

Designed to project a volume of light even beyond the normal requirements of theatres employing large screens of non-reflective surface, screens that require a tremendous increase in light value to maintain a satisfactory level of illumination.

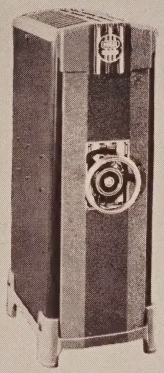
YOUR GUIDE TO BEST PROJECTION

STRONG RECTIFIERS

MOGUL RECTIFIER SIX-TUBE

(Shown at right)

Designed to produce power even beyond normal requirements of the largest theatres, as well as drive-in theatres, where the enormous screens tax lighting equipment to the utmost.



STRONG UTILITY FOUR-TUBE RECTIFIER

A low-cost rectifier for use with high intensity projection arcs.

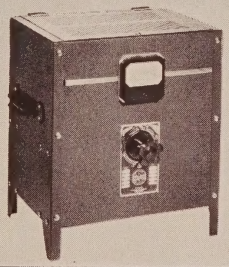
STRONG UTILITY INTERMEDIATE HIGH INTENSITY RECTIFIER

(Shown at left)

Designed especially as a power supply for intermediate high intensity arc lamps, which requires a fixed current of 40 amperes at 27 volts and an open circuit potential of 35 volts.

STRONG COPPER OXIDE RECTIFIER

A completely dry and non-chemical metallic rectifier for use with high intensity projection arc lamps.



Strong Products are Sold by

INDEPENDENT THEATRE SUPPLY DEALERS EVERYWHERE

The competent, dependable Independent Theatre Supply Dealers, located in principal cities throughout America will cooperate with you in solving any projection problem. Demonstrations of Strong equipment can be arranged in your own theatre without obligating you. Write or call nearest dealer.

THE STRONG ELECTRIC CORPORATION

2501 LAGRANGE STREET · TOLEDO, OHIO

Export Office: Room 2002, 220 W. 42nd Street, New York City

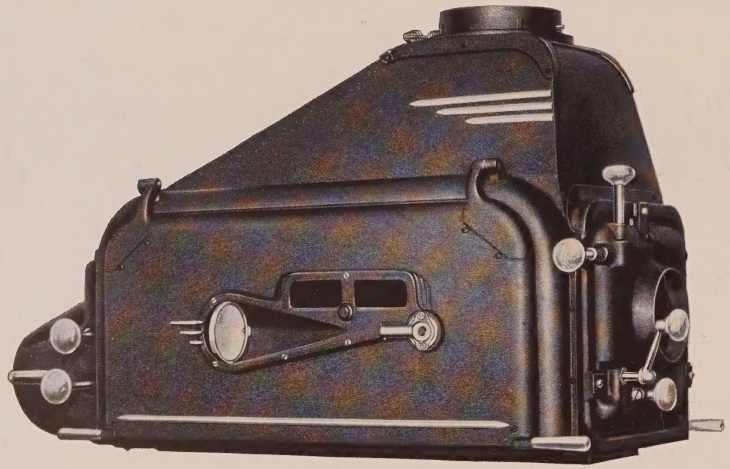
NEW! Peerless HY-CANDESCENT ARC LAMP

120 TO 180 AMPERES

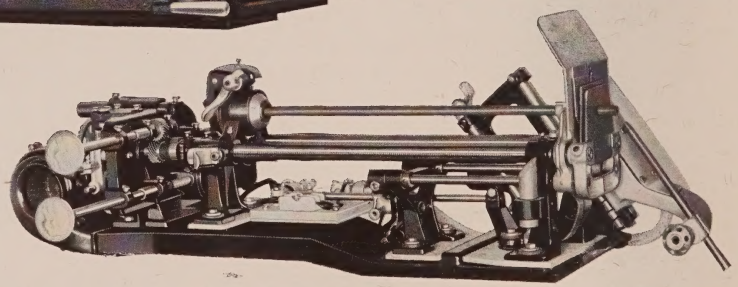
A GREAT ACHIEVEMENT IN ARC LAMP ENGINEERING

Never in the history of the industry has such a tremendous advancement been made in a unit of projection equipment as is embodied in the new PEERLESS Hy-Candescent Arc Lamp.

J. E. McAULEY MFG. CO.



- Totally new and modern in design, it has been engineered to vanquish the difficulties heretofore attendant to high current arc operation.
- The burner is unit built and provided with air cooling. It is adjustable in every direction independently from the lamphousing. A full 22" positive carbon trim is accommodated. Carbon feed mechanism is a separate assembly and removable as a unit. Feed motor is constant speed. Variable for positive and negative feeds is by mechanical means of wide range.



- The condenser lens mount is independently adjustable in all directions in respect to the arc. Mountings are available for our special F 2.2 condensers which produce 40% to 60% more light than any other system.

USED BY THE NATION'S GREATEST THEATRES

Manufactured by

J. E. McAULEY MANUFACTURING CO.

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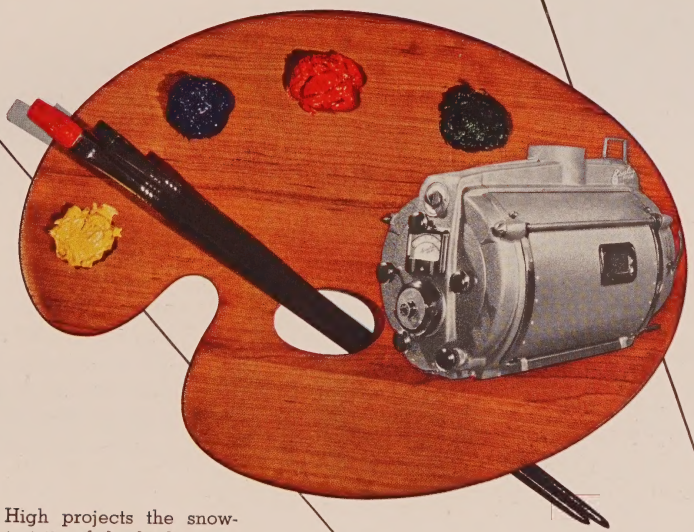

The Simplex High projects the snow-white light characteristic of the high intensity arc which is so necessary to the projection of colored pictures.

This low cost, high intensity, direct current projection arc of intermediate capacity has been designed especially for theatres of up to 800 seats and using screens as large as 18 feet in width, heretofore restricted to the use of low intensity lamps, with their dim yellow light, because the operating, if not the original cost of the earlier high intensities has been prohibitive.

Although the Simplex High projects twice as much light as the low intensity, the over-all operating costs are only slightly higher.

The New 19000 Series

Simplex High

PROJECTION ARC LAMP

Distributed by

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"There's a Branch Near You"

*Color Photographs by James T. Strong

SIMPLEX-HIGH PROJECTION LAMPS

There's a National Rectifier to Fill Every Need

National FOUR-TUBE RECTIFIER FOR HIGH INTENSITY PROJECTION ARCS

The most efficient, low-priced means of converting three-phase alternating current to direct current for use as a power supply to the Magnarc lamp. This rectifier is built in two capacities, adjustable 45 to 50 amperes and 45 to 65 amperes.

National COPPER OXIDE RECTIFIER

A full metallic, heavy duty equipment which has been designed for converting three-phase alternating current to direct current as a power supply for Magnarc high intensity projection arc lamps.

Maintenance or attention is unnecessary. There are no moving parts nor physical changes in the rectifying process, since rectification is simply by molecular action.

National SIX-TUBE HEAVY DUTY RECTIFIER

has been designed as a companion to the Magnarc lamp, wherever the lamp is to be used at high currents.

This rectifier employs six 15-ampere Tungar-type tubes, connected for full wave rectification on three-phase current which results in an overlapping in impulses sufficient to produce an exceptionally smooth output current.

National INTERMEDIATE CAPACITY HIGH INTENSITY FOUR-TUBE RECTIFIER

has been designed for use as a direct current power supply for the Simplex High Intensity Projection Lamp. This coordinated rectifier equipment has the built-in volt-amperage characteristics necessary to maintain the perfect power balance required by this new type arc.

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"There's a Branch Near You"

(Continued from Page 234)

vantage over low intensity carbon lamphouses is its improved light intensity and color at no increase in operating costs. The introduction of the nearly as economic 40 ampere direct current high intensity arc lamphouses soon after have reduced somewhat its superiority.

THE mechanical and electrical design of the arc lamphouse must be such as to make possible a steady arc, maintain the crater of the arc constantly at the focal point of the optical system, include an efficient optical system, and provide for suitable ventilation. A steady arc is accomplished by providing an arc control mechanism which feeds the carbons in such a way as to maintain a constant gap between the positive and negative carbons. Each carbon has to be fed at a different rate, depending upon its burning characteristic. Provisions also have to be made through the use of a magnet or another device for maintaining the crater constantly in its proper position. Two general types of optical systems are employed, the condenser type for the higher current lamphouse and the reflector type for the others which efficiently focus the light from the crater so that it adequately covers the entire aperature of the projector mechanisms. One of the big problems in connection with optical systems is to provide devices which do not rapidly deteriorate as a result of the intense heat or by virtue of carbon striking them. Naturally, it is important that provisions be made so that the heat from the arc is dissipated efficiently and in such a manner as to not affect the stability of the crater. It is, of course, also important that proper provision is made for easy adjustment of the optical system and arc control device so that the projectionist can keep the lens at its proper adjustment at all times, under all normal conditions.

There are still, of course, a large number of theatres in the country employing low intensity arc lamphouses. It is generally accepted, however, that the color content of these light sources is not suitable for satisfactory projection particularly of colored motion pictures and the recent introduction of economical low current high intensity arc lamps should, within a reasonable period of time, permit the replacement of all low intensity sources. In nearly all cases, direct current is required for the operation of arc lamps and this almost entirely requires some sort of power conversion equipment. This equipment may be of either the motor generator or rectifier type. Rectifiers are of various designs, including copper oxide, magnesium sulphide and tube type. In all cases, as high efficiency over as long a period of time as possible is important to minimize operating costs, and stability of the direct current to the arc lamps for varying conditions in the A.C. input is important.

The characteristics of the carbons used in most of the high intensity arc lamps is such that it is quite important to burn them at their proper rated current. In some instances, the burning rate can be affected by changing the current but this unfavorably affects either the stability of the arc crater or the color content of the source, both of which should be avoided. Consequently, any such change in current for this purpose is false economy.

IT would be well worthwhile to again point out the fact that once the proper equipment has been purchased, installed, and correctly adjusted, the one item or link in the chain which is likely to vary in its efficiency will be the screen. If a screen has depreciated to 50 per cent of its original efficiency it should certainly be replaced because one half of the money that is being spent on carbons and power for the arc lamps is being wasted and the minimum limits recommended by the Society of Motion Picture Engineers certainly will not be attained. Everyone of the items above mentioned should be given its full consideration or else the quality of the projected image will certainly be affected.

The average purchaser cannot be expected to become an expert by reading this article but there is sufficient information contained herein for him to better determine for himself by asking the salesman about his product whether he is making a good investment. The projection set-up described should be gradually approached by the exhibitor as it becomes possible to replace the various items. Each step forward will in the long run make for better satisfied patrons and increased box office receipts.

Lens Progress in Terms of Light

A real scholar traces the improvements which have taken place in projection lenses and cites their effects on your screen.

BY DR. W. B. RAYTON

IT is no distortion of the truth to say that progress in lens performance can always be measured in terms of light. Generally, we think of light and definition or image quality as two unrelated factors of lens performance, but actually progress is made in lens design only when a predetermined degree of excellence in image quality is attained with a lens that forms at the same time a brighter image than any of its predecessors. Nowhere, however, has that fact been hidden to such a degree as it has in the field of motion-picture projection.

IT will facilitate the discussion that follows to introduce at this point the concept of relative aperture. It is a matter of common observation that under the conditions prevailing in photography, for example, the brightness of the image formed by a lens increases as the size of the lens is increased and decreases as it is reduced if the focal length remains constant. It is also observed that if two lenses of different focal length are of such sizes that the ratio of focal length to diameter is equal the brightness of the images formed by the two lenses will be equal. Therefore the ratio of focal length to diameter has been recognized as a measure of the brightness of the image a lens can form. This ratio is called the relative aperture and is written variously such as; f:x, f/x, Fx, 1:x, etc., where x is the actual value of the above ratio and has a numerical value such as 2.0, 3.5, 4.5, etc. For example, in a lens of four inches focal length and one inch diameter, the ratio of focal length to diameter would be four and the relative aperture, sometimes called speed, of the lens would be written f/4. For lenses of the same focal length, the larger the lens the smaller is the f-value. For the sake of completeness, it should be pointed out that brightness of image is proportional not to the diameter but to the area of a lens which, in turn, is proportional to the square of the diameter. It is inversely proportional to the square of the relative aperture so that an f/2.0 lens will form an image four times as bright as an f/4.0 lens, neglecting the losses due to absorption in the glass and reflection at the surfaces.

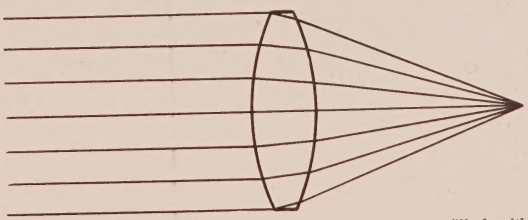

FIG. 1. To show the meaning of the expression "lens filled with light" or "lens completely utilized."

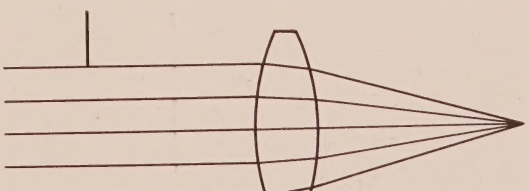

FIG. 2. Lens not completely filled with light because of the obstruction.

THE statements above hold for all cases where the lens is used under conditions such that light radiates from the object point through a solid angle large enough to completely fill the aperture of the lens with light as in Fig. 1. If, as in Fig. 2, something prevents the full aperture of the lens from participating in the image formation, the brightness of the image will not be measured by the nominal relative aperture of the lens but on that value of relative aperture actually utilized.

NOW, since the earliest days of motion-picture exhibition, projection lenses have been available of high speed. At least as early as 1913, lenses had been offered with a speed as high as f/1.8 so that, looking at present practice, it might seem as if we had progressed backwards. Actually, we have not. The fact is those early lenses were never fully utilized and, if they had been, the image quality would not have been acceptable and it would have been found necessary to reduce their aperture very substantially to improve the image quality to a satisfactory level.

The reason for this curious state of affairs rests in the illuminator. Fig. 3 represents a typical projection system of 1915. The angle of the cone of light available for the projection of the center of the motion-picture frame depends on the diameter of the condenser and the distance from the condenser to the film.

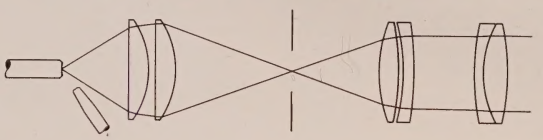

FIG. 3. Typical motion picture projection system. Condensers not large enough to utilize the full aperture of the projection lens.

This angle was not large enough to utilize the full aperture of the projection lens as indicated in the drawing. The lens, in other words, was larger than it needed to be.

For some reason unknown to the writer, the complete outfit required for the projection of motion-picture film developed in this country as an assembly of the product of three different types of manufacturing companies. The optical elements were made by the optical industry, the projector mechanisms by companies devoted solely to that line, and the illuminators or lamphouses to other companies specializing in that kind of work. It was natural, therefore, for the lens maker to attempt to make his lenses larger than his competitors and to attempt to get business on that basis without regard to whether there was any actual merit in the increased size. Had illuminators been available that actually utilized all the aperture of the lenses it is probable that early lens diameters would not have been so large.

A CONDITION of this sort did actually develop with the introduction and improvement of the reflector lamp. Prior to 1920, motion-picture projection was accomplished principally with carbon arcs and condenser lenses taken over from lantern slide projection equipment. Since a diameter of 4½" was sufficient for lantern slide projection, it was adopted in motion-picture projection and retained until 1930 when Hall and Connolly had the courage to put on the market a lamp with larger and much more expensive condensers. How this came to pass will appear a little later.

Shortly after 1920, concave mirrors made their appearance in illuminators as a substitute for condensers. It was much easier to utilize the full aperture of the projection lens with a mirror than with the condensers then in use and therefore easy to surpass the brightness of pictures hitherto obtained. See Fig. 4. One unexpected consequence was that many lenses that had been found entirely satisfactory now seemed to deteriorate in respect of image quality. They had been entirely satisfactory when used under conditions such that actually only a part of their total aperture was effective but they failed as soon as they were put to the test of full aperture performance. One of the first consequences then of the introduction of the reflector arc lamp was the demand for better lenses.

This demand was met about the middle of that decade by at least two very good types of lenses.

MEANWHILE progress in carbon design had led to the high intensity carbon. Developed primarily for searchlight work, it was made only in fairly large sizes—too large in fact for successful application in reflector lamps and yet its tremendous brilliance and white light appealed very strongly to motion-picture exhibitors. Used even with the old style condensers it gave excellent results with moderate size pictures.

NEW demands appeared, however, that continued the pressure for still more light. One of these was the introduction of the perforated screen with the advent of sound and another was the increase in size of theatres with a need for correspondingly larger screens. A step in this direction was taken by Mr. Stark of the Bausch and Lomb Scientific Bureau and Mr. Townsend, chief projectionist of the Eastman Theatre, in 1927. Their results were reported to the meeting of the Society of Motion Picture Engineers in the September meeting of that year. Nothing came of this immediately, however. A couple of years later, considerable stir was created by the proposal to greatly increase film width and correspondingly increase the size of the projected picture. Of course, one of the major difficulties that arose was that of light. The writer of this paper took an active part in the optical developments required by the wide film project and among other things designed a condenser of six inch diameter to work with a high intensity arc to illuminate the wide-film area. A modification of this condenser adapting it to 35mm film projection was found to put so much more light on the screen than the old 4½" diameter condensers that it led Hall and Connolly in 1930 to take the step referred to above and adopt this condenser in their high intensity lamp. Brenkert and Ashcraft followed with still larger condensers.

The Hall and Connolly condenser was capable of utilizing a projection lens aperture of about f/2.8. This was not enough to completely fill the usual projection lens aperture in all cases. Actual relative apertures of the popular Bausch and Lomb Cinephors, for example, lay between f/2.4 and f/3.0 depending on focal length. Nevertheless, it represented a substantial increase over previous practice.

THE failure of even the new condenser to fully utilize the aperture of these lenses left room for the manufacturers of reflector arcs to make further progress. High intensity carbons of smaller size adaptable to reflector arcs made their appearance and high intensity reflector arcs that utilized the full aperture of the projection lenses became available. There is probably no projection lens, however, whose image quality does not appear a little better when it is used at a somewhat reduced aperture than when used at full aperture so that the high intensity condenser lamp retained and still does retain its position in the esteem of many projectionists because of a conviction that it gives better image quality.

The increased illumination so easily obtained with the reflector lamp if sufficiently good projection lenses were available together with the demand for lenses of shorter focal length but equally good definition to produce the larger size pictures led the writer in 1928 to consider what might be done in improving the lens situation. The outcome was the Super Cinephor introduced by the Bausch and Lomb Optical Company in 1931. This was an anastigmat similar to the lenses used on cameras of the highest grade. For the first time, all lenses in the series were made of the same relative aperture, f/2.3, regardless of focal length. This requires that the size of the lens increase in proportion to the focal length so that a limit to focal length was set by the size of the lens tube that could be fitted to existing projectors. It was necessary to make a focal length of 5½" the upper limit for this reason.

(*Continued on Page* 245)

THE DA-LITE ELECTROL SCREEN

For theatres and school auditoriums, where the regular frame-type theatre screens are not suitable, the *Da-Lite Electrol Screen* offers many advantages. This *motor-driven* roll screen is electrically operated by a remote control, placed anywhere desired. The screen roller, and motor are housed in a compact case, *ready to install* in a recess in the ceiling or to hang from wall or ceiling hangers Available with Da-Lite *Beaded* or *Mat White* screen surface in 14 sizes from 6′ x 8′ up to and including 20′ x 20′.

High Entertainment Standards Call for DA-LITE SCREENS

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-First Choice of Experienced Exhibitors for 32 Years

SINCE THE early "flicker" days of the motion picture industry, Da-Lite has led in pioneering major screen improvements. Da-Lite was *first* to make large theatre-type silver and white screens in seamless form; *first* to provide perforated screens for use with sound equipment; and *first* to perfect a beaded sound screen that has an average light reflective factor of 85% for viewing angles up to 80 degrees.

Da-Lite Screens today are finer than ever. Made in a modern plant, by skilled workmen using only materials of scientifically proved high quality, they offer many advantages in projection efficiency, convenience and economy.

There is a Da-Lite Screen for every requirement—Theatre-type Plastic, Beaded, Silvered, and White. Ask the Da-Lite dealer for a demonstration. 48 page catalog sent on request.

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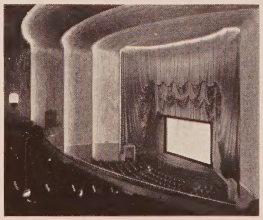

In Chicago's famous *ESQUIRE Theatre* and in hundreds of other houses, throughout the world, where entertainment standards are high, Da-Lite Screens are repeatedly chosen to insure perfect pictures and perfect sound. The screen used in the Esquire is a Da-Lite Da-Tone White Screen, size 19′ x 24′.

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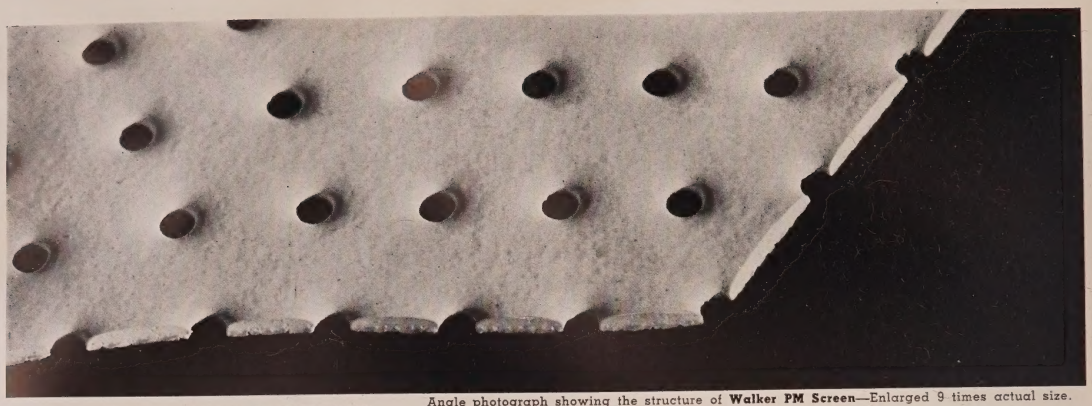
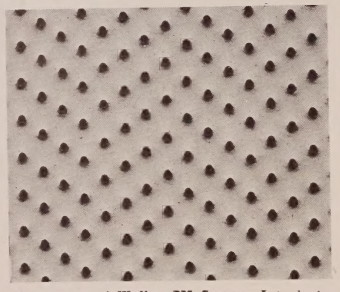
MANG.-EQUIP



Angle photograph showing the structure of **Walker PM Screen**—Enlarged 9 times actual size.

WALKER AMERICAN CORP.

WALKER PLASTIC PM MOLDED SCREEN



The surface of **Walker PM Screen**—Actual size.

METHOD OF CLEANING

The process of cleaning a **Walker PM Screen** is indeed simple. The special sponge, included with the Walker chemical cleaner, is soaked in the solution and applied to a section of the screen of approximately four square feet in area. After the section has been washed by easy circular strokes, the sponge is rinsed out in the cleaner and wrung as dry as possible. The washed area is wiped down removing most of the cleaner that remained on it. Again the sponge is rinsed and wrung out and the area is wiped down for the second and final time. The section will now be clean and dry. The next section is then started, overlapping the first slightly. The cleaning must start from the top so that any of the dirty cleaner that runs down the screen will be removed later.

HARD • SMOOTH • DURABLE

A Seamless Plastic Surface

EASILY CLEANED

The construction of the new **Walker PM Screen** is a definite advancement over the conventional theatre screen. The plastic projection surface is molded in one piece forming elliptical curves as it flares down into the perforations. There are no seams on the surface and each perforation is smoothly formed right through to its termination in the backing. In order to provide adequate reenforcement for the surface, an impregnated backing is used. It is made up of strips welded together under heat and pressure, with holes perforated in chevron waves.

Among the many advantages presented by the new **Walker PM Screen,** increased reflective efficiency over a long period of time is one of the most important. There are no seams on the projection surface to collect and trap dust. The perforations have no ragged, dust collecting edges. Moisture cannot enter the impregnated backing.

Undoubtedly, the greatest advantage of the **PM Screen** is its ability to withstand cleaning. Thru the use of an inexpensive chemical cleaner developed by the Walker American Corporation, it is possible to restore the reflective efficiency of the screen to within a fraction of a percent of its original value. Dust and smoke deposits are removed entirely without the least trace of streaks and the entire screen can be cleaned in approximately an hour by an inexperienced worker without the danger of injuring the projection surface.

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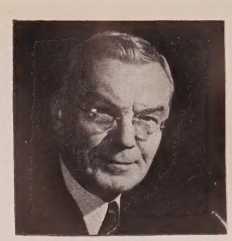
(*Continued from Page 242*)

These lenses gave excellent definition without the usual decay of image quality towards the margin of the picture that characterized all previous projection lenses but because of their complex construction and greater amount of glass they did not transmit as much light at the same relative aperture as some prior lenses. Few prior lenses reached the f/2.3 relative aperture but, on the other hand, few illuminators then available were sufficient to fill an f/2.3 aperture with light. These lenses were deservedly popular but they did not by any means constitute a complete revolution in lens practice.

AS time went on, however, the makers of reflector arc lamps produced illuminators that were competent to fill apertures even larger than f/2.3 and even the condenser type, high intensity lamp manufacturers employing condensers of over seven inches were able to increase illuminating capacity to a maximum of f/2.2 so that illuminator design advanced beyond projection lens design. Certain foreign lenses were offered with relative apertures higher than f/2.3 but, insofar as the writer knows, they were not anastigmats and, therefore, suffered from curvature of field which became more and more troublesome as the relative aperture was increased.

Without going into all of the details of the experimental work carried on in conjunction with the manufacturers of carbons, lamps, and projectors over the years between 1930 and 1940, suffice it to say that it resulted in two new series of projection lenses that became available early in 1940 with a relative aperture of f/2.0. Because of the limitations of projectors, it is impossible to adapt to them lenses with relative aperture f/2.0 and focal lengths longer than five inches. Both of the series are the product of the Bausch and Lomb Optical Company.



Dr. W. B. Rayton, director of the scientific bureau of the Bausch and Lomb Optical Co., has been a member since 1908 of the department responsible for all optical designs employed by the Bausch and Lomb Optical Co., and head of the department since 1926. He has been keenly interested in motion picture optics since 1924. His personal contributions include optics for sound recording and reproduction, condenser design, and the design of lenses both for taking and projecting motion pictures.

One of them is a series of lenses of ordinary type of construction called the f/2.0 Cinephor. The fastest of the old Cinephors had a relative aperture of f/2.4. The new lens with an illuminator capable of utilizing its full aperture will produce 44 per cent more light on the screen. The quality of image is equal to the well known Cinephor standard.

The second series is of the Super Cinephor type but with its aperture increased to f/2.0 and is known as the f/2.0 Super Cinephor. On the basis of aperture alone, it can produce 32 per cent more light on the screen than the old f/2.3 Super Cinephor but not content with this another expedient was adopted in its construction to further increase illumination, namely, the use of special coatings on the lens surfaces to reduce the loss of light due to reflection. This resulted in a further increase of 25 per cent leading to a possible total increase of 65 per cent over the f/2.3 Super Cinephor.

The best of the reflector arcs come very close to fully utilizing the aperture of these new lenses and the condenser type lamp can approach it within reason. At the moment, the lenses, however, may be said to have advanced slightly beyond the illuminator.

THE question is how long can this process be continued. Is it reasonable to expect any further increase in the effective aperture of the optical system? It would be foolish to categorically deny such a possibility but there are difficulties other than those of design that seem to establish limits in this direction. Among them are the effects on film of the increased heat at the film gate and the greater sensitiveness to position of film in the gate with respect to focus.

It is interesting to speculate on how much screen illumination has been increased since, say, 1915. The biggest single jump was undoubtedly produced by the development of the high intensity arc which probably increased illumination by a factor of five, optical developments have increased it by a factor of two to two and a half, and shutter design by another factor of unknown amount. The total increase must be at least 10 times. That does not mean, necessarily, that pictures are 10 times as bright for they have increased in size on the average and the light being spread over a larger area the increase in brightness is less than the increase in total illumination put out by the projector.

It is pretty generally believed that for really satisfactory projection the level of illumination at the screen should reach at least 10 foot candles without film and with shutter running. Developments in equipment, optical and mechanical, make that possible in practically every theatre in the country but far too many of them are operating at much less than that with resultant dissatisfaction of the paying customers.

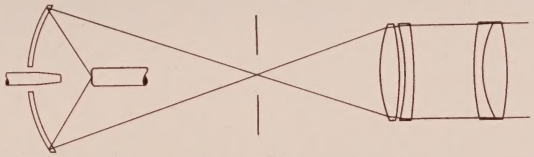


FIG. 4. Motion picture projection system with reflector lamp. Projection lens fully utilized.

Acoustic Recommendations for Theatres

The product of investigation and research, these findings merit the attention of every executive who plans a new or remodeling project.

BY THE RESEARCH COUNCIL, A. M. P. A. & S.

THESE THEATRE ACOUSTIC RECOMMENDATIONS are based upon the experience of architects, acoustical and equipment engineers, and studio operating personnel in designing, equipping and maintaining theatres. They were prepared after conferences and discussions between the committee and prominent representatives of these various groups. Through such co-operation, it is now possible and practical to formulate general principles to guide the acoustic design and construction of motion-picture theatres. These principles, when applied, will improve sound reproduction and minimize or eliminate costly alterations in the completed auditorium.

IN designing a theatre auditorium, the architect is interested primarily in the usefulness and appearance of the finished structure. However, the auditorium shape, and the type, amount, and location of the necessary acoustic materials must guide in the construction and final appearance. From this point of view, some general considerations of acoustics will be outlined, and the application of these principles explained. In order to avoid misunderstandings, definitions of certain acoustical terms are given in the appendix.

REQUIREMENTS FOR PROPER LISTENING CONDITIONS

The acoustical requirements for good listening conditions in an auditorium are that the sound loudness be adequate; that the components of the complex sound maintain their proper relations; and that the successive sounds in fast-moving speech or music be clear and distinct and that the auditorium be free from extraneous noises. These fundamental concepts are both necessary and sufficient for good listening conditions.

These proper listening conditions are affected by the following physical factors:

1. Size of the room.
2. Shape of the room.
3. Absorption characteristics of the acoustic materials and their placement in the room.
4. Extraneous noise level present in the room.

THEORETICAL CONSIDERATIONS

As the optimum reverberation time of a room and the proper control of reflection effects are the two most important factors in proper acoustical design, a brief discussion of these factors follows:

Optimum Reverberation Time

The desirable reverberation time of a room is a function of its size. The effect of moderate reverberation is beneficial as the direct sound is reinforced and a desirable liveness is produced. In general a reverberation time of over two seconds (at 500 cycles and under empty hall conditions) should not be exceeded. Excessive reverberation causes blurring of speech and rapidly moving staccato music. Where the reverberation time in the room is below optimum, an excessive amount of sound energy must be radiated, and the resultant sound is unnatural.

The optimum reverberation period varies with frequency and with the size of the room. Figure 1 gives the optimum reverberation time for various sized motion-picture auditoriums at frequencies from 50 to 4000 cycles.

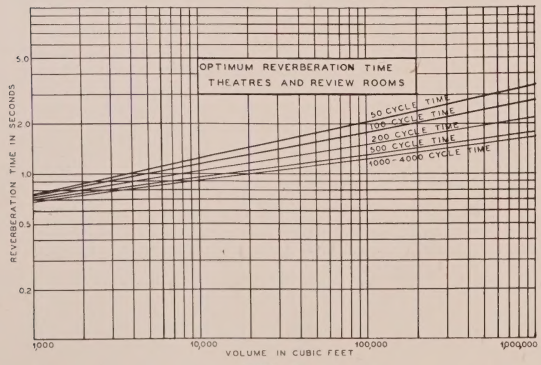


FIG. 1

Reflection Effects[1]

Many theatres still have many major acoustical defects due to their shapes and sizes which cause echoes and objectionable concentrations by a focusing of the reflected sound. These reflections are in numerous cases of greater importance than the reverberation time.[2]

When a sound wave strikes a wall of a theatre, its energy is partially reflected, partially absorbed, and partially transmitted. The reflection, for surfaces large in comparison to the wave length of the sound, is analogous to the reflection of light, and the angle of incidence of the sound is equal to the angle of reflection. The relative amounts of energy reflected and absorbed by a material vary with the angle of incidence and with the frequency.

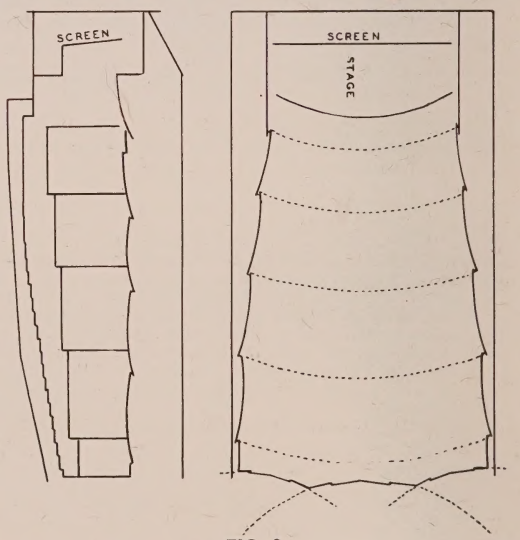
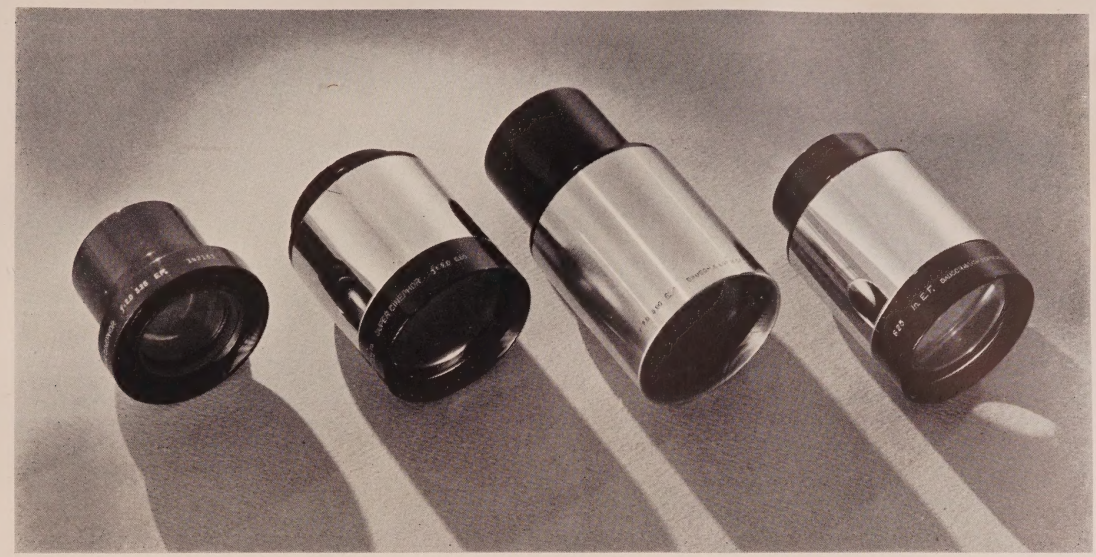


FIG. 2

However, while a doubling in energy is the maximum increase or reinforcement which can take place at any one point, the decreased level or cancellation effect can be infinite. Consequently, any absorption at the point of reflection will tend to decrease the additive and subtractive components, and to minimize the modification of the characteristics of the direct sound.

(*Continued on Page* 249)



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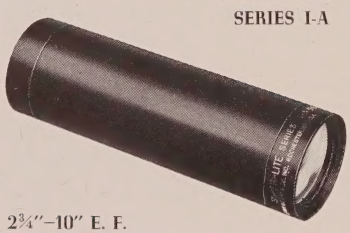

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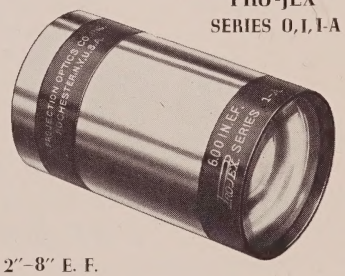

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(*Continued from Page 246*)

Control of Reflection Effects

For proper sound reflection control in an auditorium, the acoustic treatment and shape of the walls and ceiling must be such as to thoroughly diffuse the reflected sound. In other words, the reflected energy received in any auditorium location should not come from one particular reflecting area but should be contributed by numerous reflecting surfaces. The energy from any one reflection should be small compared to the total reflected sound energy at any point in the auditorium.

This also provides a uniform logarithmic decay of the reverberant sound.[3] Little is gained by attempting to reinforce the direct sound by allowing maximum reflection to take place as any small gain in sound energy may be overbalanced by destructive interference effects.

Optimum Acoustical Design

Two of the most common defects of a theatre, attributable to poor shape design, are echoes and sound concentrations.[3] These as well as other defects can be avoided and the optimum characteristics obtained by observing the following general rules (See Figure 2):

1. The cubical contents should be kept to a minimum consistent with the number of seats required.
2. The auditorium width should be from 50 to 70 per cent of the length, and the ceiling height not more than 40 per cent of the length.
3. Non-parallel surfaces should be used.
4. Convex rather than concave walls and ceiling sections should be provided. The wall and ceiling surfaces should also otherwise be broken up so as to thoroughly diffuse the sound.
5. The average absorption per square foot on the floor and ceiling should not be appreciably different from the average absorption per square foot on the side walls.
6. Well-upholstered seats and ozite-lined carpet in the aisles should be provided.
7. The backstage should be so shaped and so acoustically treated that resonant reinforcements of sound will not be reflected into the auditorium to distort sound quality.

It should be pointed out that the design in Figure 2 is only one method of applying the above principles to obtain an ideal setup. The fully convex rear wall and the convex sections on the side walls and ceiling are ideal design features, but a design including the three convex surfaces on the rear wall or a design as shown by the solid lines will also give excellent results.

These general rules will be explained in greater detail and illustrations given of good and faulty designs.

SIZE OF ROOM

Optimum Volume

Both from an acoustical standpoint and in the interests of economy, the cubical content or volume of the auditorium should be kept as small as possible, consistent with the required seating capacity and proper proportions of length, width, and height.

In small sized auditoriums, it is possible to obtain optimum reverberation conditions without acoustic treatment on the walls and ceiling, provided the seats are fully upholstered, the aisles carpeted, and the auditorium properly designed to diffuse the sound reflections and to provide uniform loudness at every seat in the auditorium.

Recent acoustical design in which the volume has been held to a minimum, without sacrifice of other features, has provided one of the most outstanding improvements in general sound quality in the theatre. From an average of recent trends in design giving satisfactory performance, it has been determined that approximately 125 cubic feet per seat is desirable for a medium sized house.[4] This figure varies with the seating capacity of the auditorium.

Minimum Power Requirements for Theatres

The acoustical power necessary for proper sound reproduction varies with the volume of the auditorium. "Minimum Power Requirements for Theatres" have been established by the Academy Research Council,[5] and are given in Figure 3* in terms of amplifier watts installed.

SHAPE OF ROOM

Recommended Auditorium Proportions

For some time, a proportion of from 50 to 70 per cent between length and width has been considered good.[3] The source of sound is at the end of small dimension. In a room with non-parallel walls or of irregular contours, the above rule may be applied using the average width and length. In those rooms where the length is greater than twice the width, the reflections between the side walls cause serious damage to the quality.

As previously explained, excessively high rooms should be avoided; that is, the ceiling height should be kept to the minimum consistent with the seating capacity and other necessary architectural requirements.

Side Walls

Flat parallel walls in auditoriums of all sizes have always been a distinct source of trouble from both a vision and sound standpoint. In such an auditorium seats installed in the front corner sections of the ground floor afford only a very distorted vision of the picture and are unsatisfactory to the theatre patron. From a sound standpoint, flat parallel surfaces give rise to disturbing sustained cross reflection. A theatre with a "fan-shaped" floor plan, as shown in Figure 2, offers decided advantages over rectangular designs as better vision is secured, and a basic shape is available which is easily accommodated to a side wall design giving proper diffusion and control of the reflected sound.[7]

Where it is not practicable to use convex side wall surfaces because of economic limitations or difficulties of providing proper lighting, the side walls should be broken up into sloping sections. These sections should be so angled with respect to the high-frequency horn as to reflect the sound well into the side rather than too much into the center of the audience.

Auditorium Ceiling

The ceiling surface should not be parallel to the floor, as such a design results in acoustical deficiencies. As shown in Figure 2, the ceiling should be designed to secure desirably directed reflections and to eliminate echoes. In all cases, every effort should be made to avoid ceiling designs which involve domes or other concave types of construction which focus the sound into the seating area. Lighting fixtures constructed with loosely held portions of glass or plastic materials should be avoided as such fixtures often rattle being resonant at certain frequencies.

Auditorium Floor

Well-upholstered and heavily padded seats should be used in furnishing the auditorium. The aisles and corridors should be covered with ozite-lined carpet. This reduces the variation in the reverberation time under different audience conditions.

With upholstered seats and carpeted aisles, it is generally not desirable to acoustically treat the ceiling. Such treatment results in an acoustic condition in which the reverberation time is shorter in the vertical direction; that is, between the floor and the ceiling than between the side walls and the front and rear walls. For optimum acoustical conditions in a room, it is necessary that the reverberation die away uniformly in every direction.

Rear Wall Construction

In the past, rear wall construction has often led to serious acoustical deficiencies in the theatre. Unbroken walls have given rise to reflections back into the audience with sufficient magni-

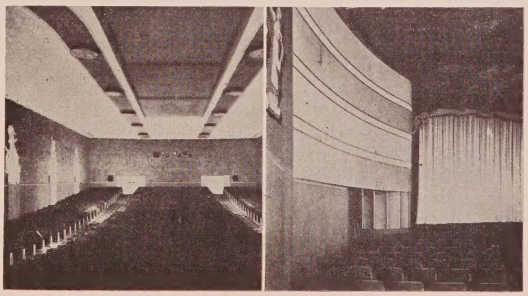

FIG. 4 - FIG. 5

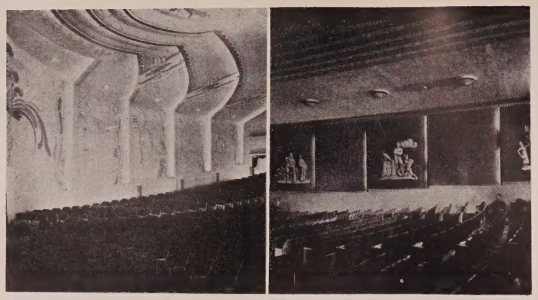

FIG. 6 - FIG. 7

FIG. 8 - FIG. 9

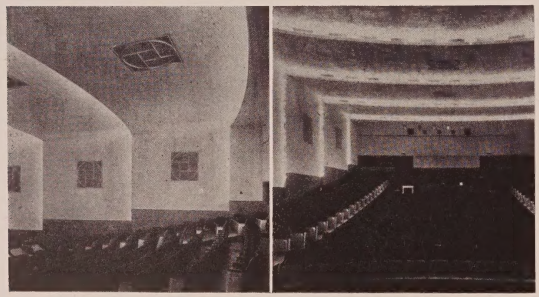

FIG. 10A - FIG. 10B

tude and time delay to be audible as echoes. Concave rear wall construction with consequent focusing of the reflected sound has also adversely affected sound quality. In contrast, convex surfaces provide the highest degree of sound dispersion.

The individual shaping may take different forms but should always diffuse the sound. Otherwise, the sound reproduction will lack presence; that is, the voices of the actors will appear to come from a source other than the screen and the illusion of reality, so important to the proper presentation of sound motion pictures, will be lost. A modified convex-type rear wall can be utilized to advantage in order to conserve seating area and at the same time to eliminate the focal difficulties inherent with concave rear wall design. Definite breaks in the contours which would have any tendency to form pockets and produce resonant cavities should be strictly avoided in the rear and side walls.

Illustrations of Bad Acoustical Designs

A typical example of a theatre with faulty acoustics is shown in Figure 4. The auditorium is rectangular in shape with flat parallel side walls, a flat rear wall and a relatively unbroken ceiling. These walls contribute to multiple echoes and a very bad overall acoustical condition. The intelligibility of the dialogue is low.

Figure 5 illustrates a side wall section constructed so as to focus the sound into the seating area. The concave wall surface adjacent to the stage focuses the reflected sound into the center section of the seating area, reducing screen presence and intelligibility. (This wall section is also shown in Figure 7, viewed from the rear of the auditorium.)

By constructing the front portion of the side wall in a convex shape as illustrated in Figure 6, a properly diffusing surface is provided and the acoustic defects are avoided. The shape of the wall in Figure 6 may be seen by noting the junction of the wall and the ceiling.

Another example is shown in Figure 7, where the ceiling is also flat and unbroken. In this case it was necessary to tilt the high-frequency horn well down into the audience to eliminate reflections from the ceiling. This decreased reflection effects but provided a decided difference in quality between the front and back seating sections.

A recent trend in rear wall construction is shown in Figures 8 and 9. When designed it was felt that such a tilting of the rear wall would reinforce the sound in the back portion of the seating area, giving a more uniform loudness level throughout the auditorium. Tests have indicated that these constructions are undesirable as this type of rear wall tends to concentrate low-frequency sound in rear audience areas and contributes to poor sound quality.

As a result of these experiences, such designs are considered impracticable and it is recommended that the rear wall generally be vertical and of such shape as to diffuse the reflected sound and to deliver it back into the audience in random directions. The rear wall must always be considered in conjunction with, and never separately from, the side wall, ceiling, and floor designs.

Application of Good Design Principles

A practical example of the application of these design principles resulting in a theatre with exceptionally good acoustics is illustrated in Figure 10. Figure 10 A shows the rear wall and ceiling construction as viewed from the side of the auditorium. Figure 10 B is a view from the stage. Figure 10 C is a schematic showing the vertical and horizontal cross sections of the auditorium and the three different rear wall cross sections in detail.

This particular auditorium has been constructed on one of the studio lots and seats approximately 700 people. However,

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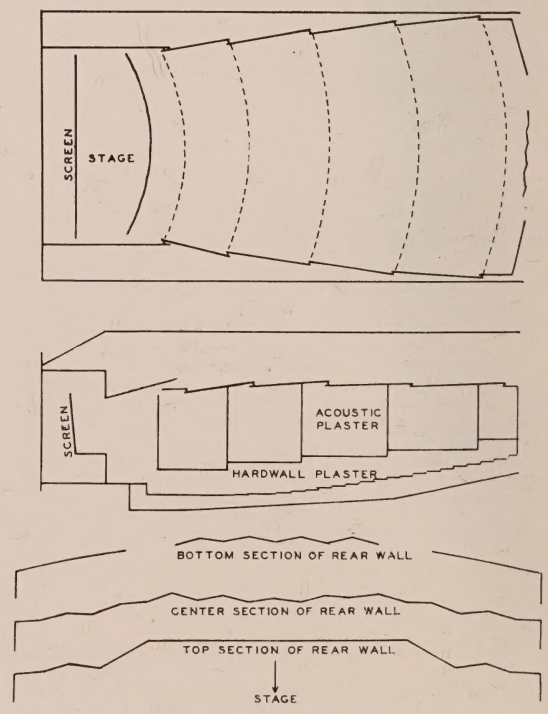

FIG. 10C

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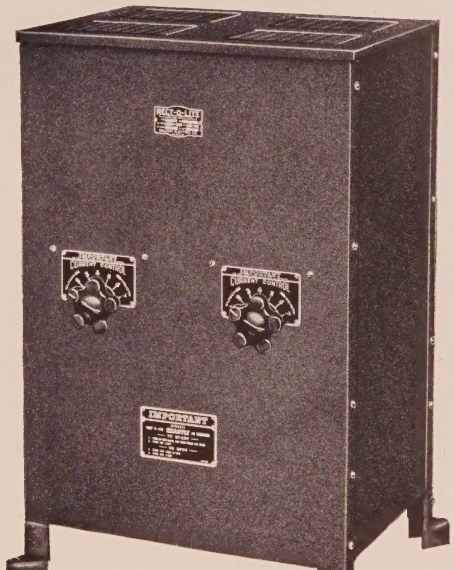

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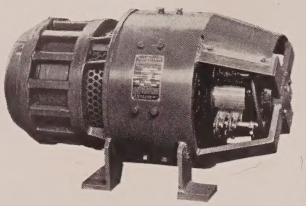

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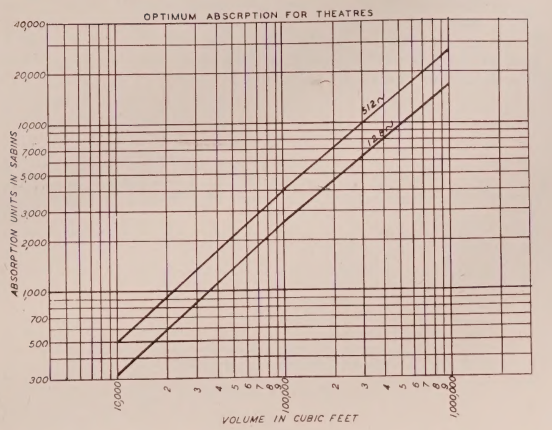

FIG. 11

in a commercial application the rows would be closer together, so this theatre may be considered to have a seating capacity of about 1000.

Although the principles of good design are fulfilled, certain features depart from the ideal given in Figure 2. Fortunately, such deviations may be made without serious penalty. The side walls, while of straight sections, have been broken up to give a series of differently sloped, small reflecting surfaces with the direction of reflection well into the side of the seating area. The same construction has been used on the ceiling. The rear wall surfaces consist of flat areas but the overall contour is convex, and the walls are sectioned in irregular sizes and at different angles so that each section is contributing only a small reflection in any particular direction. It should be noted that all sections of the rear wall are vertical and do not tilt toward the seating area.

Backstage Acoustical Treatment

In the reproduction of sound in the theatre, one of the most critical acoustical requirements is adequate backstage draping. In the design of the speaker and its associated unit, every effort is made to minimize the amount of sound radiated from the back of the loud speaker. However, a certain amount of "leakage" radiation takes place and must be adequately absorbed. It is realized that efforts along this line have been made by various architects, but, in general, the absorption provided has not been sufficient.

Although the rear wall of the stage is often covered with rock wool blankets, this material, when applied directly to a brick wall or other hard surface, has been inadequate. In other cases, the absorption material has been set out from the wall on furring strips with the absorption material applied to wire mesh stretched across the strips to increase the low-frequency absorption properties. This is far more effective than the former method but still does not reduce the backstage reverberation time to the necessary negligible amount.

It has been observed that in a large number of cases this treatment is finished with a white surface, and for proper picture projection results it is suggested that a black covering be used instead to avoid light reflections back to the screen.

Considering the type of backstage absorption treatment normally provided, it has been necessary for the theatre owners to completely cover the back of the screen with ozite, with the exception of the space occupied by the loud speakers.

Suitably located drapes around and above the speaker provide an efficient means of absorbing undesirable backstage sound reflections. However, this type of treatment is an added expense to the exhibitor and some form of speaker draping and screen masking should be combined in the initial design.

In the design of the stage of the auditorium, two factors should be borne in mind. First, for proper viewing and listening conditions the first row of seats should be at least 20 feet from the screen, where the screen is not more than 16 feet in width. For wider screens the first row of seats should be back an additional 15 inches for each foot of screen width over 16 feet. Second, the stage floor should be shaped to give an unobstructed view from the front seats and the stage area should be covered with a rug or other sound absorption material to eliminate reflections directly from the loud speaker into the seating area.

ABSORPTION CHARACTERISTICS OF ACOUSTICAL MATERIALS

The absorption characteristics of commercial acoustic materials vary widely. Some materials also show a pronounced absorption peak in their characteristic. These materials, while highly efficient for certain purposes (absorption of typewriter clicks, for instance), may be detrimental in a theatre as their use produces a non-uniform response.

Materials selected should show a smooth absorption characteristic and materials with adequate absorptivity at the low frequencies should be used. For this reason, care should be taken in selecting the material to be used in an auditorium in order that the desired overall effect be secured.

Modern acoustic materials are of such varied design and construction that it is possible for the architect to apply the proper sound absorption material and at the same time to produce almost any artistic effect desired.

LOW-FREQUENCY ABSORPTION

Due to the fact that many acoustic materials are deficient in absorbent qualities at the low frequencies, it is often necessary to use these materials in a particular way to effect sufficient low-frequency absorption in the auditorium. To obtain this absorption at the extreme low frequencies the diaphragm action of the walls should be utilized. This action may be explained as follows: Where a wall is not rigidly supported, as in the case of a furred-out wall, it will act as a diaphragm and vibrate at certain frequencies, depending upon the dimension of the wall, the mass per unit surface and the manner of wall support. This diaphragm action may either reinforce or absorb the sound near the particular frequency at which the wall resonates. If the wall has little internal resistance it will continue to vibrate after the original sound has died down and will reradiate energy into the room reinforcing the original sound.

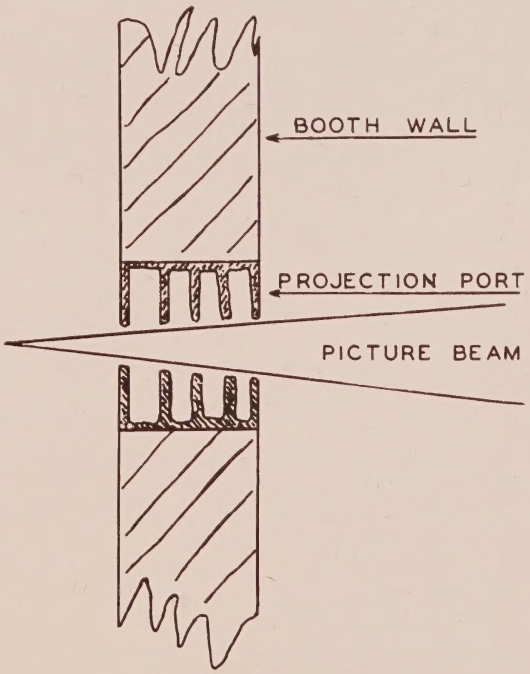

FIG. 12 Showing method of baffling projection port.

Credit for this material must be given to the Research Council Theatre Sound Standardization Committee of the Academy of Motion Picture Arts and Sciences. Membership of the Research Council, which directs the work of the Theatre Sound Standardization Committee includes Darryl F. Zanuck, chairman; vice-president in charge of production, 20th Century-Fox Film Corporation; Nathan Levinson, vice-chairman; director of sound recording, Warner Brothers' studio; John Aalberg, director of sound recording, RKO-Radio studios; Farciot Edouart, in charge of the transparency department, Paramount studio; Bernard B. Brown, director of sound recording, Universal studios; E. H. Hansen, sound director, 20th Century-Fox Film Corporation; John Livadary, director of sound recording, Columbia studios; Charles L. Lootens, director of sound recording, Republic studios; Thomas Moulton, director of sound recording, Samuel Goldwyn studio; Elmer Raguse, sound director, Hal Roach studios; Douglas Shearer, director of sound recording, Metro-Goldwyn-Mayer studios; John Hilliard, chairman, Theatre Sound Standardization Committee.

In contrast to this, if the material has high internal resistance to vibration (as do masonite, celotex and similar acoustic materials) the vibrations will die down faster than the reverberation time in the room and no "hang-over" effect takes place. To avoid a boomy house (which has excessive response in the region from 60 to 300 cycles) it is often advisable to make use of this diaphragm action to absorb these low registers.

In the practical application of such design the furred-out walls should be made into different size sections by irregular bracing of the wall itself. Such construction provides wall sections of different dimensions which absorb the low frequencies through a wider band and avoid dips or peaks in the response characteristics.

Non-Symmetrical Absorption Areas[8]

The most recent design considerations have proven the efficacy of using completely non-symmetrical small areas of absorption materials as contrasted with the earlier use of large treated surfaces. This non-symmetrical arrangement tends to maintain the long indirect path reflections and to reduce the formation of surface patterns resulting in unsatisfactory sound conditions.

The amount of sound absorption material necessary in theatres of various sizes is given in Figure 11. This chart is useful for design purposes.

AUDITORIUM NOISE LEVEL

A theatre to have good acoustics should have its walls insulated against the transmission of outside noise into the auditorium.[9] The transmission of sound is of two kinds:

1. Air borne 2. Structural

Small openings around doors, windows, through portholes, etc., transmit sound readily. For this reason, all of the joists between walls, doors and windows which lead outside should be made as tight as possible. Transmission of sound through the building structure (such as the noise from vibrating machinery) can be minimized by using double wall and double floor construction where required and by separating all vibrating machinery from their supporting structure with vibration isolating materials such as cork or rubber. Massive walls are not always necessary to obtain sufficient sound insulation. A double wall of fairly light construction will give good sound insulation privided the two walls are not closely coupled mechanically by nails or rigid close members.

A large part of the transmitted noise often comes from the projection booth. For this reason as much fireproof acoustic material as possible should be placed on the inside walls and ceiling of the booth. As much of the projection booth noise is radiated through open portholes or portholes with glass windows, these too should be treated.

The recent introduction of acoustically treated sound baffles has shown a marked reduction in noise transmitted through portholes by their application as shown in Figure 12.[10] Design data is given in the appendix. It is also recommended that the air-conditioning system be operated at a low noise level, by employing a large volume, slow velocity system.

If these Recommendations are followed, the resulting auditorium will give sound (as reproduced on a modern two-way equipment) with high intelligibility, warm, natural screen presence, good balance between high and low frequencies, uniform loudness level throughout the auditorium, and the proper relative balance between high level music passages and low level, intimate dialogue scenes.

APPENDIX*

*From AMERICAN TENTATIVE STANDARD "Acoustic Terminology" ASA Bulletin Z24.1—1936.

ACOUSTIC ABSORPTIVITY

The acoustic absorptivity of a surface is equal to one minus the reflectivity of that surface.

ACOUSTIC REFLECTIVITY

The acoustic reflectivity of a surface which is not an original source is the ratio of the rate of flow of sound energy reflected from the surface, on the side of incidence, to the incident rate of flow.

DIFFUSE SOUND

Sound is said to be in a perfectly diffuse state when in the region considered, the energy density, averaged over portions of the region large compared to the wavelength, is uniform and when all directions of energy flux at all parts of the region are equally probable.

ECHO

An echo is a wave which has been reflected or otherwise returned with sufficient magnitude and delay to be perceived in some manner as a wave distinct from that directly transmitted.

ECHO, FLUTTER

A flutter echo is a rapid succession of reflected pulses resulting from a single initial pulse. If the flutter echo is periodic and if the frequency is in the audible range, it is called a musical echo.

ECHO, MULTIPLE

A multiple echo is a succession of separately distinguishable echoes from a single source.

MEAN FREE PATH

The mean free path for sound waves in an enclosure is the average distance sound travels in the enclosure between successive reflections.

RATE OF DECAY

The rate of decay of sound energy density is the time rate at which the sound energy density is decreasing at a given point and at a given time. The practical unit is the decibel per second.

REVERBERATION

Reverberation is the persistence of sound, due to repeated reflections.

REVERBERATION TIME

The reverberation time for a given frequency is the time required for the average sound energy density, initially in a steady state, to decrease, after the source is stopped, to one millionth of its initial value. The unit is the second. Thus the time required for a sound to decay 60 db is the reverberation time.

SABINS

The sabin is a unit of equivalent absorption and is equal to the equivalent absorption of one square foot of a surface of unit absorptivity, i.e., of one square foot of surface which absorbs all incident sound energy.

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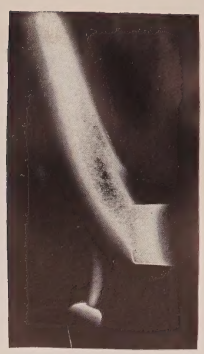

SCREEN LIGHT AVAILABLE FROM HIGH INTENSITY PROJECTION LAMPS

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Simplified High Intensity	"Suprex" Cored Positive "Suprex" Cored Negative	7 mm x 12 or 14 in. 6 mm x 9 in.	50	36	2950	19.5
	"Suprex" Cored Positive "Suprex" Cored Negative	8 mm x 12 or 14 in. 6.5 or 7 mm x 9 in.	65	36	3600	21.5
One Kilowatt Arcs D.C.	"Suprex" Cored Positive "Orotip" C Negative	7 mm x 12 or 14 in. 6 mm x 9 in.	40	27.5	2150	18.0
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High intensity lamps provide a greater volume of screen light than low intensity lamps. This allows a clear screen image to be shown in the presence of a safe and comfortable level of general illumination. Patrons entering the theatre from the brilliant light of the street or lobby can find their seats without discomfort or embarrassment, while the absence of extreme contrast between the screen and surrounding illumination adds to visual comfort in viewing the picture.

A further advantage of the high intensity arc for projection is the snow white quality of its light. The light from the low intensity arc is yellowish. This distorts the hues of color features and detracts from the impression of realism which color is designed to create. High intensity projection reproduces all colors with great fidelity and gives a realistic quality to color features not otherwise obtained.

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From the standpoint of the small theatre, the development of the "One Kilowatt," high intensity arc ranks among the most important advances in the art of motion picture projection. It enables the smallest theatre, at no increase in operating cost, to have the advantages of snow white projection light and the recommended level of illumination on the screen.

The use of the high intensity arc for projection has, from the beginning, met with the hearty approval of theatre patrons. Theatres that could afford to install and use the more expensive types of high intensity projection lamps have held a decided advantage in respect to quality and abundance of projection light.

The development of the low intensity reflecting arc lamp put the small theatre more nearly on a par with its large competitors in respect to projection quality until the advent of color. Then the superiority of high intensity projection light for color films proved so noticeable that users of low intensity projection lamps were again placed at a serious disadvantage.

The "One Kilowatt" arc, without increasing operating cost, now allows the small theatre to give its patrons 50 to 80 per cent more screen light, realistic color reproduction and a quality of picture presentation unsurpassed by any theatre, regardless of size.

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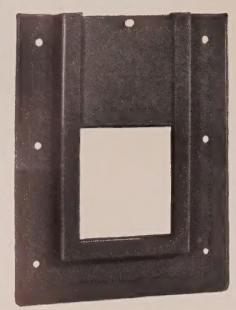

"BEST" FIRE SHUTTERS MEET ALL INSPECTION LAWS

Protect yourself against fire and other emergencies in your projection room. Protect yourself with "Best" Fire Shutters—a shutter that satisfactorily meets all state and city inspection laws, which require gravity doors or shutters on portholes of projection rooms. "Best" Fire Shutters and "Best" Shutter Controls prevent smoke from spreading into auditorium. And they last, because they are made of heavy 10 gauge steel. Grooves for drop plates are welded to back plate. Drop Plates are 1/4" plate—will always DROP. Complete and ready to install.

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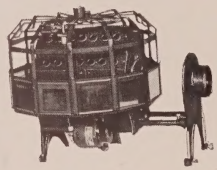
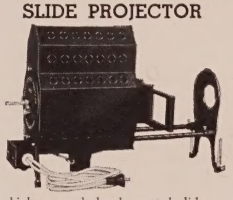
"BEST" AUTOMATIC SLIDE PROJECTOR



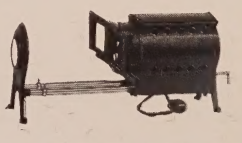
An ideal slide projector for continuous operation, comes in three sizes, 500, 1000 and 1500 watt. May be used in projection booth, in lobby or on roof with outdoor screen. Powered by heavy duty motor and completely foolproof. 500 watt model accommodates ten slides—1000 and 1500 watt models, twelve slides.

"BEST" 1500 WATT SLIDE PROJECTOR



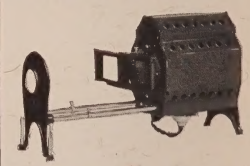
A high powered, hand-operated slide projector. Delivers twice as much light as a 1000 watt projector and is for use on exceptionally long throws or where an exceptional amount of screen illumination is needed. All "Best" Slide Projectors come complete with mirror, heavy-duty cord and switch. In addition, the 1500 watt models are equipped with Heat Absorbing Glass as a protection to the slides.

500 WATT BESTEREOPTICON



The ideal projector for the small theatre, classroom, lecturer, church, and photographer. High efficiency and low price make the 500 watt Bestereopticon unusually popular for distances up to 75 feet. A trial will convince you that this projector delivers screen results that are equal to those of much higher priced projectors. Leatherette Carrying Case available.

"BEST" 1000 WATT SLIDE PROJECTOR



A projector for general use that has found a place in theatres using high intensity lamps for their film projectors, and especially where the distance to the screen exceeds 75 feet. Lamp and mirror adjustments on ALL "Best" Slide Projectors are on the OUTSIDE where they are cool and easy to get at. Leatherette Carrying Case available.

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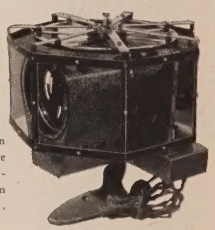
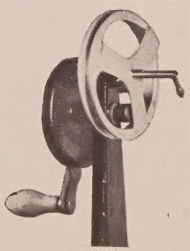


Seven colors used on color wheel, adjustable to spot or flood. Standard model for use on Alternating Current. DC model available.



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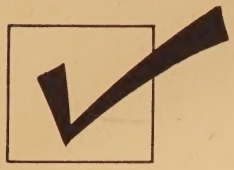

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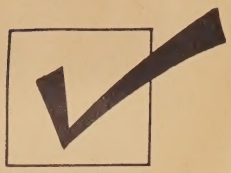

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- ☐ Upholstering Materials

- ☐ Vacuum Cleaners
- ☐ Vending Machines
- ☐ Ventilating

- ☐ Wall Covering
- ☐ Wind Breaks
- ☐ Work Lights
- ☐ Water Proofing

OTHER ITEMS

- ☐ .....
- ☐ .....
- ☐ .....
- ☐ .....
- ☐ .....
- ☐ .....
- ☐ .....
- ☐ .....

Without any cost or other obligation to me, I desire further data on the items checked above, for which I am in the market or considering.

Owner Architect
Manager Purchasing Agent
Maint. Eng. Supply Dealer

NAME_____

THEATRE or COMPANY_____

ADDRESS_____

A SERVICE TO YOU that we are glad to render! TRY IT!

Management and Equipment

Rules of Conduct for the House Staff

Delegating the actual details of the duties of each employee, predicted on deluxe operation.

BY A LEADING METROPOLITAN CIRCUIT

GENERAL RULES—Employees should always remember every patron is a personal guest.

Do not chew on duty. Take pride in your appearance, both off and on duty.

Remember that you represent the theatre while you are employed and the company you work for at all times, whether on or off duty, and conduct yourself so that it can be proud of you.

Report to the manager any unusual occurences of any nature, regardless of how unimportant such occurences may seem to you.

List comments from anyone in your theatre, the programs played, particular pictures patrons would like to see, any condition, favorable or unfavorable, and report them to manager.

Never raise your voice. Always speak softly and courteously.

Handle all routine, exchange tickets, etc., in the proper manner so there can be no question about your honesty.

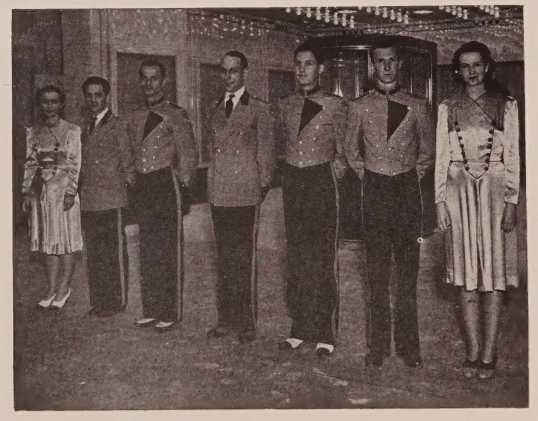
Be thoroughly familiar with the current program playing in your theatre, the time each feature or short subject goes on the screen and is finished. Know the stars in pictures you are playing. Know the big pictures that will be shown in your theatre soon and know in detail the next program to play your theatre.

It is compulsory to attend regular house, fire, and safety drills.

MANAGER—It is the manager's duty to merchandise his pictures, operate his business in the proper manner, and establish and maintain an efficient and courteous staff.

A manager must be in his theatre at least one-half hour before opening time, open and close the theatre and be on the floor during hours theatre is open. However, when theatres which have continuous shows, while manager is away for meals, the assistant or head usher will assume charge of floors until manager returns which should be no later than 7 P. M. in evening.

Manager will set example in neatness and in appearance. Wear dark clothes or Tuxedo during winter months, light coat and proper apparel during summer months. White shirts, where possible, should be worn at all times. Be clean shaven. Nothing will mar your appearance more than poorly kept teeth. A bad breath is offensive to anyone and, most of all, your patrons. If you must eat vegetables or other food which has an objectionable odor, never do it before going on duty at your theatre. Set the proper example to your employees in your own dealing with patrons and citizens of your community.



A TRIM STAFF furnishes the personal touch of courtesy at the Bradley Theatre, Columbus, Georgia. This theatre which is under the direction of Lucas & Jenkins, Inc. is one of the show places of the South. The uniforms shown were specially designed by Howard A. Zeimer of the Russell Uniform Company.

TELEPHONE OPERATOR—In the case of smaller theatres, the telephone operator is usually the cashier.

The phone should be answered "———— Theatre, good afternoon" or "Good evening," etc. The operator is usually asked what is playing and the schedule of the show. She should have a copy of the schedule next to the phone to be able to give clear, concise and polite information at all times. Remember that a voice can smile the same as a face.

CASHIERS—When choosing cashiers, make sure they are neat, attractive and possess a pleasing personality. They should not use too much make-up nor wear eye-attracting jewelry. When on duty, they should not chew gum, eat or drink in the box office. The box office should be kept neat and tidy—shelves neat and clear. There should be no display of large amounts of money in the box office.

The girls should be pleasant and polite at all times and should always say "thank you" to patrons buying tickets.

Cashiers should follow the rules and regulations set down by the auditors in conducting the business in the box office.

Another important item for cashiers to avoid is to have reading material in the box office. At no time should the girl be reading a book, newspaper or magazine while on duty in the box office.

When friends or other employees linger around the box office, the cashiers should not carry on a conversation not pertaining to business. All personal conversations are taboo while on duty.

Watch your appearance, be neat, clean and attractive. SMILE.

DOORMEN—Basically, a doorman's job in each theatre is to take the tickets at the door. However, his duties are varied in each individual theatre. He must be able to use tact and diplomacy at all times as the door is the place where most disputes take place in the theatre.

It is preferable to have a doorman go through the ushers' training and to be on the floor as an usher before he is placed on duty on the door. He must be taught how to stop patrons with an insufficient amount of tickets, how to stop young people who have children's tickets instead of adult ones, how to explain to parents that a child is too old to pass in with a child's ticket, that even children must have tickets.

He should have a schedule of the running times of the show and be able to give polite information on the show at all times. He should know how to announce on the walk and what phrases to be used, what is to be said during standing room conditions and what definite phrases are to be used to patrons.

He must keep a check on the outside house lighting, marquee, roof signs and all illumination used during the day and evening. Any irregularity should be reported immediately to the chief of service.

He should, under no circumstances, speak to the cashier while on duty unless it is purely a matter of business. No conversations are to be held in front of the theatre that do not pertain to the business at hand.

He must not keep any stubs in his hand, but deposit them immediately in the box. Also, he should say "thank you" upon returning the stubs to the patron. Remember nothing makes patron feel so at home as a friendly greeting from the doorman. Be polite and courteous and, above all, be sure that your friendly greetings are enthusiastic and sincere.

USHERS—INTELLIGENCE—The first thing to be determined in an applicant is intelligence. It is hardly possible to give each applicant an intelligence test, so the employer must judge according to what he sees fit in deciding on the relative mental capabilities of the applicant.

APPEARANCE—An usher at all times on the floor should be neat and well groomed. He should be at least five feet 10 inches tall, if possible, clean shaven, with clean hands and face, finger nails trimmed and clean, hair combed neatly, shoes shined and clothes pressed and neat. If the applicant is untidy when apply-

ing for a job, it is a fair indication that he is naturally untidy and careless of his appearance. His face should not be repulsive.

WILLINGNESS—It is possible, by noting an applicant's attitude in applying to judge whether or not he is willing to work. Some boys apply just to have a job to make them a few extra dollars each week. Most do not realize that they have a chance to advance in this business. An attitude of willingness to learn and work is a prime necessity for an usher.

POISE—This is another important requisite in picking ushers. A boy may qualify in every detail, but he may not be able to walk correctly. He may be one of those ungainly, loose-limbed, gangling boys who are awkward and will make an awkward appearance. Each boy must have the ability to walk, stand and be snappy in his posture. One boy out of line in poise will practically ruin a service staff in its appearance.

GENERAL RULES—USHERS—Be careful in your treatment of all patrons and extend friendly welcome to your patrons both leaving and entering the theatre and extend courteous service.

Never talk back to a patron no matter how they abuse you.

Never use a flashlight in such a manner that it will attract the attention of the patrons and detract them from what is happening on the screen. Keep the flashlight pointed to the floor at all times.

Noisy babies are a problem and you must be very diplomatic but yet accomplish your purpose in quieting such disturbances without offending anyone.

Know your hand signals and use them so that your work can be accomplished with no disturbance whatever.

Know exactly what to do in case of emergency.

Report immediately to the manager defective sound, defective light or screen, poor ventilation, insufficient heat, petting parties, etc.

Do not visit with friends, acquaintances, employees or patrons or allow them to loiter near your station.

Ushers must be taught to give special service to the aged, children and particularly women with children in their arms, not to get too far in front of patrons being shown to seats, and not to turn off the flashlight until the patron is seated.

When it is necessary to ask a patron to come to the stage, he should be ushered from the time he leaves his seat until he has returned.

Don't flirt with the young lady patrons even if they are receptive to flirting or invite it.

Don't have a bad breath.

Learn your time schedule of shows daily.

Never accept a tip.

Ushers must know at all times how many available seats there are in their section.

An usher at all times should be able to use common sense. He must realize that something different happens every day. Some situations develop each day which have never before occurred. He must learn that common sense and self-reliance are important factors in being an usher. Every rule is subject to conditions and alterations some time during operations. At these times, judgment must be used. If a situation cannot be handled by an usher, his superior must be found immediately.

MATRONS—Matron should present herself in a manner of a hostess helping with package, outer clothing and try to make patron comfortable. Take very good care of children, see that they sit in proper place and behave. Have a schedule of the show ready. Never argue with the patron. Speak only when spoken to, in a quiet and gentle manner. Refer all complaints to the chief of service.

Know all first aid instructions and where to go for supplies. Keep a needle and thread on hand at all times. See that towel containers and soap containers are kept filled. See that waste receptacles are clean and all bulbs are lit. Any irregularities should be reported to the chief at once. Always be in the ladies room at the break. Do not engage in lengthy conversation with other employees. If patron enters the ladies room with a small boy, use discretion in handling the situation. If necessary, offer to have an usher take the boy to the men's room. Uniform must be neat and clean at all times. Listen to all comments and report to chief, whether comments good or bad.

PORTERS—Porter's duties depend on the size of the theatre. Their main functions for any theatre, however, are the same—to keep the entire theatre spotlessly clean at all times, well-heated, and well ventilated. It is best to have a regulated schedule for porter to follow as to daily work and periodical work.

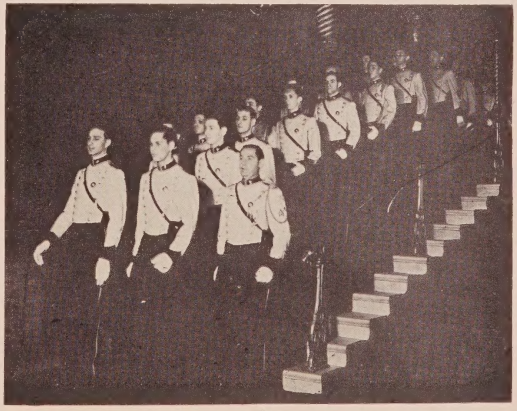
PUBLIC SAFETY AND FIRE PREVENTION—The theatre manager and staff are charged with the public safety. It is their first responsibility. A theatre manager who, through neglect, has endangered the lives of his patrons can never serve again. The theatre, itself, must offer every means of safety. The aisles, exits and passageways must be ready for an immediate emergency. The staff must be schooled for the unexpected.

FIRE PREVENTION—The theatre staff should provide an effective fire brigade and the staff meeting should be the time to discuss the location, purpose and use of each piece of fire prevention apparatus. A private system for conveying an alarm of fire and providing for the orderly prompt evacuation of the house should be devised by the manager and should be understood by the entire staff. The chief of the fire department should attend a staff meeting once every six months. The use of kerosene for cleaning or polishing and paint stored around the theatre aids to the fire hazards.

There are several preparations (inexpensive) for rendering the stage scenery practically fireproof. Holiday decorations or advertising displays in which lights and flimsy fabrics are used constitute positive fire risk. Be very careful in using them. Most big theatre fires are attributed to defective electrical wiring or temporary wiring for stage and advertising display. Rubbish permitted to accumulate is extremely likely to cause a fire some day. This is especially true of oily rags, cotton or janitors cleaning material form part of accumulation.

Fire escapes are never needed until the emergency arises. They should be tested regularly and should be adequate to empty quickly a capacity house. Be certain that your supply of water for sprinklers and hydrants is tested regularly. See that each hydrant and sprinkler carries an inspection day tag. Fire hose should be kept in a ventilated recess. If hose is enclosed in an airtight shelf, its life will be greatly shortened. Smoking and cooking, curling irons and electrical appliances should be prohibited in the dressing rooms and staff rooms. Booth fire doors, fire shutters, panic bolts on each door should be inspected regularly.

ACCIDENTS—The accident problem in the theatre is an acute one which requires a great deal of common sense, tact and diplomacy. When a patron falls down the stairs (the most common accident), there are several things which can be done. If the person is hurt, or cannot walk he should be assisted to some office where first aid can be administered. The spot where the accident took place should be examined immediately to determine if the accident was due to a fault in the carpetry, etc. Take down time, date, name and address and all information necessary for the report. It is important to obtain any witnesses possible who saw the accident. Under no circumstances should an employee of the theatre take the injured person home in his car.



THE WELL DRILLED CREW of the Roxy Theatre, New York parades to their positions a la West Point. With every shoe polished, every hair combed, and every button in place following a rigid inspection, this "changing of the guard" is a thrilling theatrical presentation in itself that is certain to reassure every patron regarding the safety and service which they will receive.

If an accident should occur to the automobile, the theatre would be liable. A relative, taxi, or city ambulance should be called with an interne. Aisle lights and special lighting effects at places in the theatre where accidents may happen minimize the danger. Theatre lights must be regulated against the daylight which the public leaves upon entering the theatre. That is, a theatre needs more illumination during the matinee performances or when it is brighter outside than at night. Worn or loose carpet, sliding rugs or weather mats which curl are among the most common accident hazards.

Theatre steps or stairways must be properly lighted and have protecting hand rails. Accidents occur from signs falling when it is windy. Display boards and valances should be carefully watched and counter-balanced to keep from blowing down. Accidents often happen to pedestrians and non-patrons in front of the theatre. The sidewalks must have same care as the auditorium. Tile and terrazzo in the rest rooms, lobby and sidewalks in front of the theatre should be cleaned with Trisodium Phosphate as soap leaves an insoluble substance when dry. Theatre floors should never be waxed. Know the danger spots in the theatre and fortify them by special lighting and staff guidance.

LOST AND FOUND—The chief of service is usually in charge of the lost and found situation. When a patron loses an article, it is usually reported to the first usher seen. This usher should make an immediate effort to locate the missing article with the least amount of disturbance to seated patrons. If article is not found, card should be filled out by chief of service. If the lost article is later found, a letter should be sent or a telephone call should be made to the patron asking them to come to the theatre and identify and claim the article. After a certain period, if the article is not found, it is customary to send a letter of regret informing the patron that the article has not been located. A filing system makes it easy to refer to all forms pertaining to the missing article. Articles should be kept locked in a cabinet for a certain period of time, then put into another cabinet and after another period of time, the article may be disposed of. In case of real valuable articles not called for, they must be sent to the home office.

And from another circuit comes these general rules for ushers:

Report on the floor in uniform and be ready for work five minutes before your scheduled time.

When given your post by the Chief of Service or usher in charge, stand at attention and DON'T LOOK AT THE SCREEN.

Keep a steady check on your aisles, and when it is busy be sure you know amount and location of seats vacant.

In the mezzanine, feet must be kept off the railing in the first row, and off seats in front.

Watch for loud talking, snoring, or male patrons wearing hats

Take every patron down to a seat.

Pick up pieces of paper lying on the floor.

Don't hold long conversations with anyone.

Don't smoke, chew, or drink intoxicating liquors while in uniform.

Don't leave your post without permission from the manager, Chief, or man in charge.

When on relief do not go out in uniform jacket unless you are sent on a short errand. When going on a long errand, remove your jacket.

When going out on an errand, always notify the person in charge.

When addressing a patron, courtesy is demanded at all times.

While working, hold no conversation with cashier or candy stand employees.

At the break, go to the head of your aisle, except when there is standing room.

Know your schedule of show without leaving your aisle to answer a question.

Any usher flirting on the floor will be dismissed immediately.

What the Patron Expects from You

The Executive Secretary of The National Board of Review tells what they expect from theatres in management, appointments and entertainment.

BY JAMES SHELLY HAMILTON

I WOULD drop into a motion picture theatre oftener (unless I had already set out for that purpose) if, as I was strolling past, I saw in the lobby, visible from the sidewalk, a sign telling what time the next feature started. I know a theatre that has a dummy clock in the lobby, with the hands fixed at the time the next showing of the feature is to begin. If it is a picture I want to see, and it is nearly starting time, I go in. If I have half an hour to wait, and an errand to do, I do the errand and come back. I don't like to get in in the middle of a picture.

If the theatre I usually went to carried the feature starting times in its ads, I would go oftener, because the effort of telephoning to find out might be just enough to make me stay at home.

I DON'T go to a theatre, if I can help it, that isn't clean, well ventilated, and well enough lighted so I can find my way around without risking an accident, to myself or someone else. By clean I mean a general air of freshness, not dinginess,—and particularly no peanut shells and cigarette butts around my feet. By well ventilated I mean enough fresh air in circulation so I don't come out with a head-ache. As for lighting, there are unobtrusive ways of making enough illumination for the aisles where you have to walk, without interfering with the general darkness that is necessary for the proper effect of the picture on the screen.

James Shelly Hamilton was born in Orange, Mass., and educated at Montague High School and Amherst College. To Amherst he gave the song, "Lord Jeffery Amherst," one of the best-known college tunes of its kind. After leaving college, he did various forms of writing, and worked for several publishers. As dramatic critic of "Everybody's," Hamilton was one of the first to write about films in a national magazine, and to accord them the prominence he felt they deserved. In 1917 he joined the AEF and served two years in France with a medical unit. After the war, he worked as a writer for various motion picture companies, and later edited "Cinema," a monthly film journal. Hamilton joined the staff of the National Board of Review following a visit to France in 1930, and became executive director of the group this year.

I WOULDN'T take a child with me too young to enjoy a picture without a lot of questions, or without enough respect for the comfort of others to sit fairly quiet and keep his enjoyment within reasonable bounds—that is, make no more demonstrations than the people around him were making. As for children who go in groups, I would like them to be in a section by themselves: not shoved away over on the side, because their tickets are as good as anybody's and entitle them to as good a view of the screen, but in a definite place that belonged to them, where they could be under the eye of an usher who could quell any mischief that broke out, and where their particular way of enjoying the show wouldn't be too close to disturb less lively patrons. As a matter of fact, except in the case of westerns and serials, I believe that youngsters enjoy pictures in the same way as older people, and if they are absorbed in what is going on on the screen they look and listen without any particular demonstration.

MORE of a problem than the children are the older people who come to the movies to visit or to discuss the picture as it goes along. These, I have found, are likely to be the ladies. I don't know what anyone can do about them, if they happen to be in neighboring seats, except to get up and find some quieter place to sit.

Definitely ladies, if you can call them that, are the ones who feel insulted if you ask them to take their headgear out of

your range of vision. Perhaps there could be some modern revision of the old slide in the nickelodeons: "Ladies will kindly remove their hats."

THERE is one point that might be made for smokers, in the parts of the house where smoking is permitted. Even if he is very careful where he drops his ashes and grinds out the lighted butt with his foot, somewhere in his subconscious mind the smoker's attention is taken from the picture by a vague worry that maybe he has left a smoldering spark in the carpet, if there is a carpet, or in his own or a neighbor's clothes. If it were possible to have conspicuous, easy-to-reach ash receivers that didn't fall to pieces when cigarettes are vigorously extinguished in them people who are apt to worry about fire would feel more comfortable.

In places where people get into the habit of going to a certain theatre, there is a lot of satisfaction in knowing that the theatre follows a certain routine in its presentations: that on certain days there will be adult films, then on other certain days films the whole family, from grand-parents down to younger children, will find enjoyable. Naturally, the logical times for the family pictures are at week ends when the children have time from school and home work to go to the movies. I don't know how universally booking arrangements can be made to conform to this plan. I know it is followed successfully in many communities. It is even more successful where the whole program for the week end is made suitable for the family audience —both features, if there is a double-feature show, and whatever shorts are used. For parents who take some trouble to supervise the motion pictures their children see, it is no great help if one of the features is most desirable for the young people, and the other feature, or one of the shorts, is something that children would find tiresome or unpleasant or perhaps in some cases harmful.

THESE arrangements for special programs depend on how closely the exhibitor finds it profitable to work with certain elements in his audiences. In large cities where a theatre gets its patrons from a sort of transient, passing-by crowd, this is no problem. But for theatres where the same people go over and over again, to whom movies in a certain house are a part of their habit of life, there is a good deal to be gained by getting their audiences into the way of expecting, and counting on, a certain type of film—family or adult—on certain days.

ONE more point, about trailers. I wish trailers would leave me some kick to get out of the picture itself, and not show me so many high-lights that I feel that I've seen enough of it without coming around next week to see the whole thing. In other words, the simpler the announcement, and the more it arouses my curiosity without satisfying it, the better the trailer does its job of getting me back into the theatre again.

Building and Equipment Depreciation

Here are the percentages that can be charged off your investment—as prepared by a leading firm of Public Accountants.

SO you're a theatre owner—and you think you're making money —and life seems very rosy—but—

How about depreciation?

Have you any idea just what the depreciation rates should be on the various departments of your theatre, mechanical equipment, carpets, drapes, signs, spots, etc.? Well, unless we miss our guess, many of you don't.

IT was to fill such a need that we went to a competent firm of accountants and secured from it what we consider to be an intelligent schedule of depreciation rates. While, obviously, all the items listed aren't included in the inventory of every theatre, most theatres will find a practical reference to everything contained in the modern house.

Here goes: (listed alphabetically for convenience, with the percentage of annual depreciation noted directly after the listing.)

	Percent
Acoustical Treatment	10
Aisle Lights	10
Asbestos Curtain	10
Auditorium Cove and Floodlight Fixtures	10
Boiler Room Equipment	6⅔
Carpenter Shop (Excluding small tools which are immediate expense)	10
Carpets	33⅓
Check Room Equipment	10
Cooling System (Fans, etc.)	15
Counterweight Systems	5
Dictagraph and Inter-Office Telephones	10
Draperies	20
Drinking Water Cooling System	6⅔
Electric Light Bulbs (To be written off within six to 12 months, with replacements as immediate expense)	
Electrical Lighting Fixtures (Commercial portion)	6⅔
Electrical Stage Equipment	15
Electrical Work (Wiring, conduits, outlets, etc.)	4
Elevating Machinery	5
Elevators	5
Electric Light Fixtures	10
Furniture (Chairs, settees, tables, mirrors, floor and table lamps, etc.)	15
Linoleum and Rubber Floor Coverings	20
Lobby Railings and Chains	10
Metal Vases	10
Miscellaneous Building Equipment	20
Miscellaneous Stage and Theatre Equipment	20
Orchestra Stands and Chairs	10
Organ	10
Paintings	10
Painting, Decorating, Murals	10
Painting (Commercial portion)	20
Pianos	20
Plumbing	4
Poster Frames	10
Projection Room Equipment (Excluding sound equipment)	20
Projection Screens	20
Public Address Amplification System	10
Radiators, Steam Lines, Etc.	4
Railing Coverings	33⅓
Refrigerating and Ventilating Systems	6⅔
Relics	10
Rugs	33⅓
Seats	10
Signs (Not including electric light bulbs)	15
Sound Equipment—Percentage of equipment cost to be depreciated an average of 11-12 one year, about 20-24 two years, and 65-75 in five years. (Alteration costs to be written off over five years. All parts replacements are immediate expenses.)	
Spotlights	15
Sprinkler System	4
Stage Curtains	20
Stage Switchboard	10
Statues	10
Steel Lockers and Safes	10
Theatre Structures—3⅓, except where cost of rest of commercial structure can be charged off at slightly lower rate.	
Ticket and Change Machines	20
Ticket Booths	10
Turnstiles	20
Ushers' and Doorman's Uniforms (Within three to six months, replacements as immediate expense.)	
Ushers' Signal System	10
Window Shades and Blinds	20

(Note: The foregoing rates pertain to new equipment and properties owned in fee or under long term leases. If these are several years old when acquired, they should be depreciated over the remaining life. In the case of de luxe houses where art objects have been purchased, these should be separately classified at inventory and not depreciated. Marquees should be given special consideration.)

Getting Good Will from the Standees

Tips on the handling of crowds—and what one of the nation's best theatres does to impress them with service excellence.

BY THE SERVICE STAFF, ROXY THEATRE, NEW YORK

WHAT would people the world over do without movies? The motion picture theatre today is an important factor in the lives of millions; and the Roxy, New York City, has played a vital part in its development. Few of the millions who have attended the famous and ever popular Broadway stage and screen house realize what is involved in running a great theatre such as the Roxy. It takes a highly trained, specialized organization to handle the crowds and keep everyone happy.

THE Roxy, under the guidance of the late Samuel L. (Roxy) Rothafel, was one of the first theatres in the world to install the present day service staff technique. And although thousands (the Roxy has a seating capacity of approximately 6000) of visitors come to the theatre every day for every performance, each person is received as individual guest. You get the feeling that members of the service staff are really glad to see you,—and what's more, they are! There are 125 members of this great service institution, or one third of the theatre's entire personnel. They are probably the world's most imitated service groups and today the Roxy's in your very home town no doubt execute some portion of the New York's Roxy plan of service. They are not just efficient automatons, but personal representatives of the theatre. Their chief desire is to help you have a good time and enjoy to the fullest the hours you spend in the Roxy.

IT TAKES TRAINING AND EQUIPMENT to handle crowds efficiently and firmly yet with a courtesy that retains goodwill. A flustered usher promotes a flustered and impatient crowd.

AND that brings us to our subject,—'Just what goes on behind the scenes of this service establishment?' A dictionary defines SERVICE as 'work performed for the benefit of another'. However, the finest and most comprehensive set of rules ever devised by service 'experts',—yes, even by authors of dictionaries,—cannot increase or even affect a staff's efficiency unless it is taught to 'serve from the heart'. And that's one of the great secrets of the success of the Roxy Service organization.

VERY few of the 125 members of that theatre's service personnel ever realized the joy and satisfaction of true service before becoming a member of the Roxy family.

First there is the type of man required. He must be clean appearing,—not necessarily tall and dark, so to speak,—but a pleasant appearing individual in a uniform. He must be intelligent, gracious, even tempered and have a sense of humor.

The next step is training. Before a member of the Roxy Theatre staff is permitted to have a personal contact with a patron he attends a two day fundamental instruction class, which consists of rules and regulations governing his conduct in the theatre, —how to handle patrons and their problems in a dignified and courteous manner,—how to make announcements properly,—the proper method of greeting and seating,—the importance of giving correct and truthful information, and a general idea of how the theatre is operated. These points are gone over thoroughly as they are important to good service.

THE classes are held by Captains and junior executives, who are proficient in their work and who have been promoted from the staff. The new men are then instructed while the theatre is in actual operation. They are assigned to the less important posts and instructed and schooled gradually. All criticisms are constructive and are given in a constructive manner. This plan of instruction encourages new men to loosen up and ask questions on matters that confuse them at the very beginning.

Actually it takes from three to six months of constant training and instructions before the new members of the staff become of real value to the Roxy, as there are many posts every new man must familiarize himself with on each of the three floors.

Meetings are held once a month and, strangely enough, it is not compulsory to attend,—they are purely democratic. A chairman is elected from among those present and it is here that the men, both, new and old, voice their opinions, and offer suggestions to improve service and the service staff. In order for a suggestion to be tried, it must have a majority vote of the members present. And while on the subject, it should be stated,—these meetings are attended to the proportions of nearly ninety five per cent.

When new men "graduate" to the Service Staff of the Roxy, they are as efficient as West Point cadets—but not nearly so formidable!

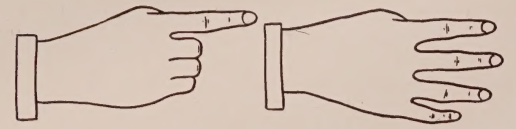
ONE thing is certain,—everything in the way of good service and aid to entertainment is offered by the Roxy staff, and that's why other theatres the world over have copied the style and technique,—and the very reason that thousands walk out of the theatre every day perfectly pleased with the treatment they have received, so much so that in many cases they take the time and trouble to write members of the executive staff of pleasant experiences they have had in connection with the service department and its aim to please and "serve."

All photos by Staff Photographer Jack Partington, Jr.

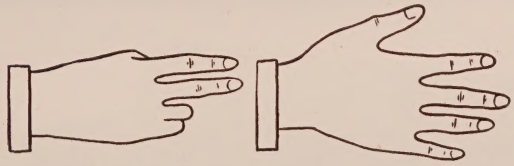
Hand Signals for Quick Seating

As specially prepared for this volume.

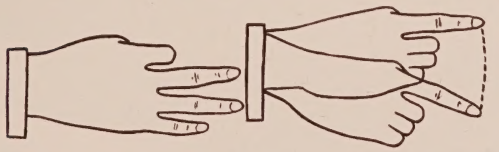
BY BEN STEWART



UNITS ONE AND FOUR. For Unit One, left, hold the arm across the breast, and point one finger straight out. The index finger is customary. In Unit Four, right, the last four fingers held as far apart as possible will aid in making the signal clearer.



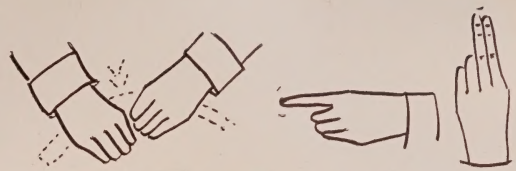
UNITS TWO AND FIVE. For Unit Two, left, the arm is held as shown above, and two fingers are held out. The index and third digit are used. In Unit Five, right, fingers are held far apart. The signals six, seven, and eight are five plus one, five plus two, etc.



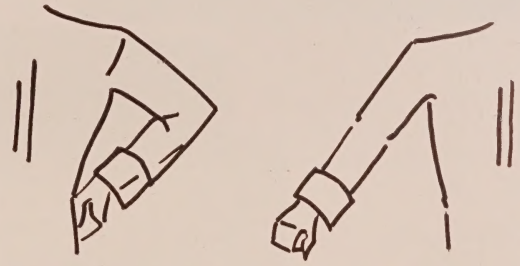
UNITS THREE AND 10. For Unit Three, left, the last three digits are held as far apart as possible. In Unit 10, right, by dropping the finger (as low as necessary for clearness) 10 is seen. Two fingers would be 20, three would be 30, etc.

RED LIGHT AND CONGESTED SIGNALS. Holding the flashlight between the fingers which are held together tightly, left, is one of the best methods of calling without gestures or words. The fist held in the palm of the other hand, right, or fingers clasped over fist means people crowded in the aisle or passage.

ONE HUNDRED SIGNAL AND PEOPLE STANDING SIGNAL. For 100 signal, left, hold the arm across the breast and circle as many times as needed to make clear. Two fingers would be 200, three fingers 300, etc. To indicate people standing, right, clasp all fingers inward, with only the upright held thumbs showing.

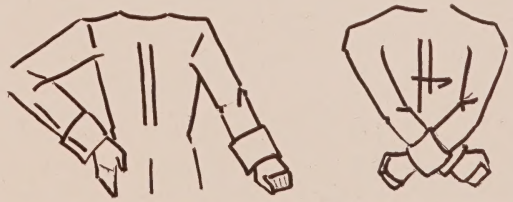


THE BREAK AND AISLE CHECK. For the break, left, hands go through the motion of breaking an imaginary stick. This indicates the end of the performance and the departure of the audience. Asking for aisle check, right, the director points, circles with the finger, and holds up fingers to correspond with the aisle number. A doorman asking for a house check merely points and circles with the finger.



ONE DOUBLE AND ONE SINGLE SIGNALS. To indicate one double, left, arm is bent out with hand on hip. Hand signals are used to show more than two. To indicate one single, right, arm is held out from the side. This may also mean more than one if hand signals are used.

AISLES CLEAR AND BALCONY SIGNALS. To indicate aisles clear, left, rigid arm is swung straight out from side of body. In very large houses, this signal is used to indicate 1000 seats. Palms are held outward, right, with an upward motion of the whole arm to indicate that there is standing room or seats in the balcony.



TRIPLE AND FULL CHECK SIGNALS. To indicate three seats together, left, give the double and single signals simultaneously. For full check, right, arms crossed as shown above mean "no more."

(The Theatre Catalog Editors are indebted to Ben Stewart, Gorman, Framingham, Mass., for the use of this material.)

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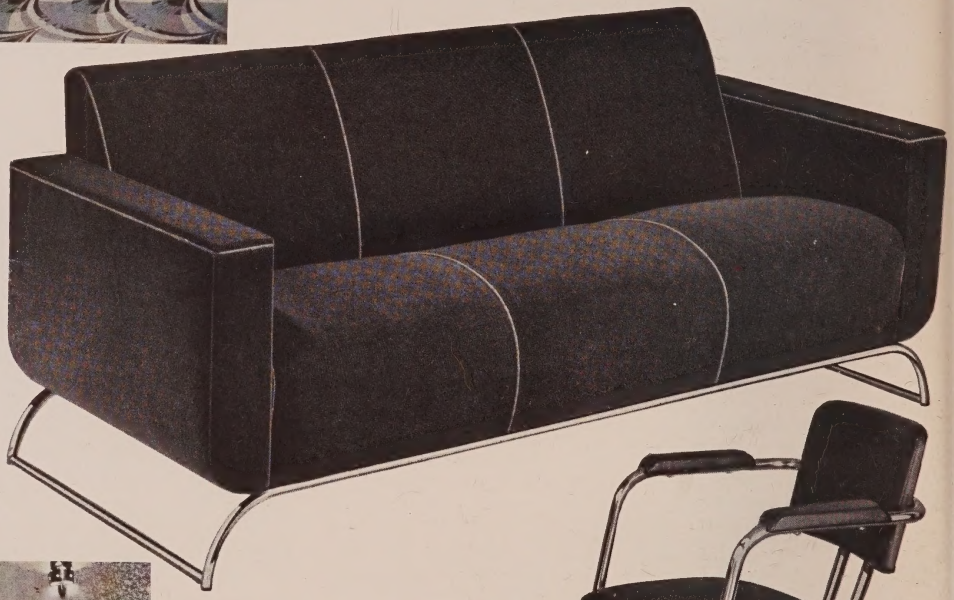

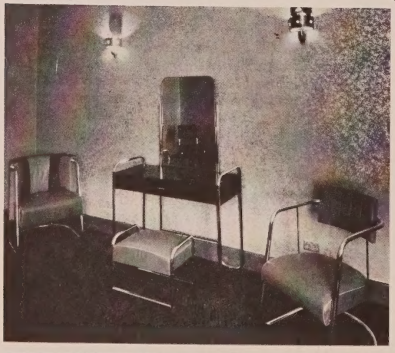

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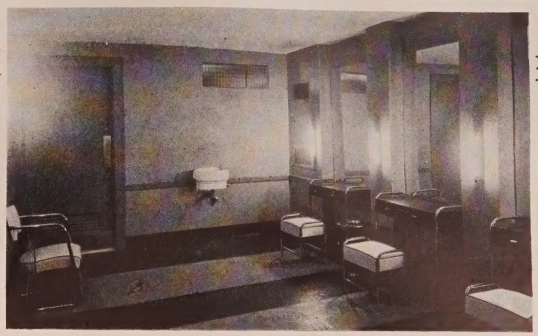

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DOEHLER METAL FURNITURE CO., INC.

Candy, Popcorn and Vending Machines

Supervisor for one of the nation's leading circuits discusses all types, methods and their potential success as business boosters.

BY WILBUR B. ENGLAND

MOST theatre operators today are faced with ever-increasing difficulties in trying to operate their businesses at a profit. Increases in tax rates and types of taxes, increases in labor costs, and increases in film rentals are all demanding a greater share of each dollar taken in at the box office. Such conditions make it imperative not only to obtain the utmost in operating efficiency and in aggressive showmanship, but also to explore and develop all possible subsidiary income-producing facilities that may exist in the theatre. Chief among such subsidiary income-producing facilities is the sale of candy, popcorn, and other products, or services, through stands and vending machines. Some exhibitors today receive from 20 per cent to 50 per cent of their net profit from the income from vending products in the theatre.

While the sale of candy, cigars, cigarettes, beverages, and ice creams has been undertaken since the early days of the theatre, it is only within the past 10 to 15 years that real development has been made in vending equipment, and it has been only in the past five years that this development has reached a point where the full benefits to be derived from modern merchandising methods can be realized.

IN many instances, the proper development of the vending machine industry has been retarded by the type of business man who has been engaged in the handling of the business. He has lacked foresight, knowledge of sound merchandising principles, and, in many instances, has used push cart peddling methods in attempting to operate his business. One of his chief errors has been in attempting to make a large profit by privately packaging merchandise of inferior quality. Where such methods are practiced, the exhibitor may receive a larger percentage of sales, but the sales will not be so great as they would have been had quality merchandise been sold.

METHOD OF OPERATION:

Ownership Equipment
vs
Obtaining Equipment and Service Through a Concessionaire

There probably is no one best method to operate all types of vending machines. Some exhibitors prefer to own and operate their own equipment, while others believe the job is handled better by a concessionaire who specializes in a particular type of vending machine operation. Still others own some types of equipment and deal with concessionaires for the operation of other types of equipment.

A PARCEL CHECKING SERVICE in conjunction with a personally attended candy stand has been found after extensive trial by the RKO Circuit to be an appreciated patron service. In most cases patrons preferred it to a free check room.

Where there is available a concessionaire who really knows how to operate his business, an exhibitor will probably be better off to have the concessionaire handle those types of equipment which require frequent replenishment of product and servicing of the mechanical part of the equipment. The possible exception to the above is in those cases where the exhibitor has a large enough number of theatres to make it economical to establish a specialized department to operate the vending machines. It should be realized that the proper and successful operation of vending machines is a specialized business in itself and has its own problems. Unless an expert in that field guides the operations, the maximum profits will not be obtained.

Successful Operation of Vending Machines in Theatres Depends on Observing Certain Fundamentals:

Before the installation of any vending equipment is made in a theatre, three questions should be asked, as follows:

1. Will the installation interfere with the proper operation of theatre? The fact that an exhibitor is primarily in the theatre business should not be forgotten.
2. Will the equipment provide a definite convenience or service to the patrons of the theatre?
3. Will the equipment provide a good source of revenue?

In all instances, the answer to the first question should be in the negative. It is most satisfactory when questions 2 and 3 can be answered in the affirmative. However, there are times when the service to the patrons will be such as to gain their good-will, even though the income from the equipment is hardly worth the bother of installation.

When the advisability of the installation of equipment has been decided upon, attention must be given to the equipment itself. Many engineers and manufacturers who design and build various types of vending machines think only in terms of the industrial market for their equipment and thus overlook the requirements of the theatre. The exhibitor should check the following items to insure that the equipment will be adaptable to his theatre or theatres.

1. If electricity is required in lighting or operating the machine, the equipment should have an approved seal from the Fire Underwriters Laboratories.
2. The equipment should be noiseless in operation.
3. The equipment should be lighted so that it will be noticeable in the darkened interior of a theatre and yet will not reflect light which will interfere with the projection of the picture on the screen.
4. The equipment should have large enough capacity to handle the business available during a period of pressure business. Nothing is quite so aggravating to the members of a theatre staff during a period of peak attendance as to have patrons complaining that they have deposited coins in vending machines and did not receive merchandise in return.
5. All vending machines should be equipped with modern slug-proof coin mechanisms.
6. It is desirable to have vending machines equipped with meters so that an accurate count of the products vended is available at all times.
7. Beverage vending machines should have adequate cup capacity, as well as adequate facilities to handle the disposal of waste cups.
8. The machine should be designed to be "safe" from a standpoint of public liability accidents—
   a. It should be stable on its base—not top-heavy.
   b. It should not have sharp protruding edges.

Many kinds and types of vending equipment have been used, are in use, or have been tried out in theatres. In a brief article, such as this, it is obviously impossible to comment on all types and kinds of equipment. However, an attempt will be made to discuss briefly the more common types of vending equipment, and mention some of the new developments in this growing industry.

(Continued on Page 273)

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BERLO SERVICE IS RELIABLE. Our expert service men keep BERLO machines always in perfect condition. You'll like their efficiency, courtesy and helpfulness.

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Complete specifications of the STANDARD Model will be sent on request. Before proceeding with any plans regarding the SPECIAL Model, consult us about size limitations.

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Either the STANDARD or SPECIAL Model can be conveniently placed against any wall. For complete unity, however, a wall recess should be provided for the SPECIAL Model. Within certain limitations, we can then "build" the vendor into this recess according to your own specifications.

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To insure delivery on time, where the SPECIAL Model is to be built-in, notice should be given at least 90 days in advance. We will gladly furnish blue-prints and other information.

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More Showmanship Greater Beauty and Eye Appeal

The same rugged foolproofness and service that ever distinguished Burch Machines with a score of new features.

Greater sales! More dol'ars per sack of popcorn! Satisfied, delighted patrons that come back for more.

A tested system of merchandising *more popcorn* than you ever dreamed possible in your location.

Thousands of showmen, theatre owners, and chain executives attest that Manley's (Burch's) is always best.

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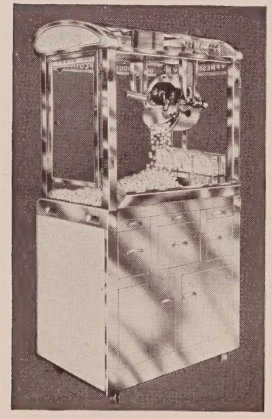

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(Continued from Page 270)

Any attempt to classify vending machines into groups of related machines has to be based on the arbitrary judgment of the person making the classification. The writer has used the following three classifications in his thinking on the subject:

1. Vending equipment designed to provide amusement. Represented in this group are automatic phonographs (widely known as "Juke Boxes"), pin ball machines, fortune telling machines, horoscope telling machines, automatic photograph machines.
2. Personal service vending equipment. Included in this group are scales, machines vending sanitary napkins, sanitary belts, bobby pins, machines vending cosmetics, dispensers vending hand lotions, drinking cup dispensers, coin lock toilets with or without sterilized toilet seats, checking lockers.
3. Vending equipment selling products consumed by the purchaser—candy machines, cigarette machines, popcorn machines, soft drink dispensers.

AMUSEMENT VENDING EQUIPMENT:

The equipment designed for amusement purposes is usually installed on the basis that it will be of interest to those theatre patrons who wait in the lounges for the beginning of a picture, or to meet their friends. In a few instances, such equipment has been installed in order to capitalize on a current fad which is sweeping the nation.

Usually it is only practical to install this type of equipment in locations where there are large lounge areas. However, the automatic photograph machines have been used advantageously in entrance lobbies where there was adequate room.

The automatic phonograph has become a jack-of-all-trades in some theatres in small communities. In addition to being used to produce revenue, it has a place in creating interest in coming musical pictures. Records carrying the popular songs of the coming attractions are used in the machine a week or two in advance of the picture. Still another use is as the source of music for dance and amateur contests.

Amusement vending equipment usually produces a large initial revenue—many horoscope machines have taken in over $100 per week at the start—but the novelty soon wears off and income drops rapidly.

Usually it is the better class of theatre which has lounge area of a sufficient size to install amusement machines. Large sums of money have usually been spent on interior decorations and hence, it may be incongruous to install equipment that was originally designed for the penny arcade. Whether such a reaction is aroused depends in large part on the class of patronage.

PERSONAL SERVICE VENDING EQUIPMENT:

One of the most popular and widely used of the vending machines is the scale. This Personal Service Type vending equipment is a consistent revenue producer. Theatre ownership of scales is justified under the following conditions:

1. Provisions can be made for adequate servicing.
2. The owner recognizes that, as owner, he bears the risk of obsolescence.
3. The owner recognizes the necessity of having a proper system to check on the honesty of those persons who have access to the money boxes of the scale.

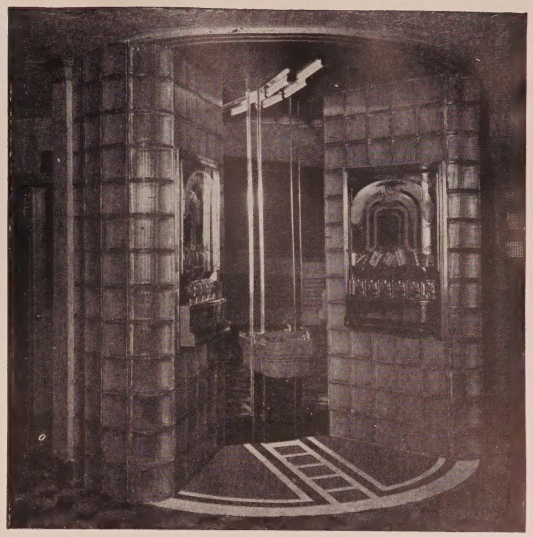
All types and sizes of scales are available—some novelty scales tell fortunes; others give out horoscopes. The argument of whether a spring scale or a springless scale is most satisfactory has been battled out for years and, as far as the writer can ascertain, no winner has been announced.

Large scales versus small scales is also a good subject for debate when scales are discussed among interested parties. Some operators have found that the large scale produces more revenue than the small scale; others have had the opposite experience. Some operators believe that scales belong in the rest rooms where greater privacy exists; others believe that revenue is increased when the scales are in lobbies, foyers, and mezzanine promenades.

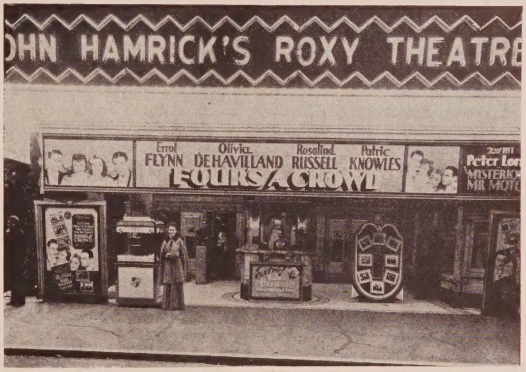
The writer believes that size of space available should be one of the principal governing factors in selection of the size of scale and that, where possible, the scale should harmonize with the interior decorations. Scales should be located in the line of vision, whether in rest rooms or other locations.

It is interesting to note that scale income has jumped substantially since the defense tax was placed on theatre admissions—more patrons have pennies in their pockets.

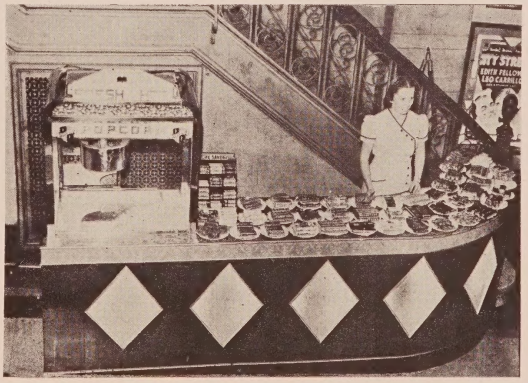
The sale of sanitary napkins should be made on a convenience motive, rather than on a profit motive. In many sections of the country, patrons resent a sale price of 10c per napkin and, as a



BUILT-IN CANDY MACHINES form a decorative point of interest in the Stonehurst Theatre, Philadelphia, Pa. Four such machines are incorporated into the design of the lobby.



FRONT VENDING. Taking advantage of the large open lobby of the Roxy Theatre, Seattle, Wash., not only patrons but casual passersby are served with hot popcorn by a pretty attendant.



AN ATTRACTIVE DISPLAY of popcorn and candy in the lobby of the Tivoli Theatre, Gary, Indiana, was built by the theatre employees. The 2200 seat Palace Theatre in the same city has been known to sell $106.00 worth of popcorn and candy in one day.

Wilbur B. England is a graduate of Western Reserve University, and a former instructor of economics and accounting at Alabama Polytechnic Institute. He received his M.B.A. at the Harvard Graduate School of Business Administration, where he became a member of the research faculty in the marketing department. Since 1932, England has been connected with RKO theatres, in charge of merchandising, and as director of personnel and assistant to the general manager.

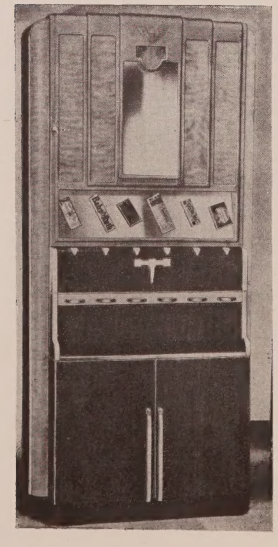
fair profit can be made at 5c per napkin, this price is advisable. Vending equipment has been developed which dispenses sanitary belts and bobby pins in addition to sanitary napkins. Equipment of this type is, of course, installed in ladies' toilets.

Equipment vending cosmetics in 10c sizes, such as lipstick, cold cream, face powder, and mascara, has been used in the ladies' lounges of theatres with little success. Fundamentally, there is no reason why the vast majority of women theatre patrons should purchase 10c sizes of cosmetics when visiting a theatre, as they have put on their make-up before coming, and usually carry the necessary "touch-up" articles with them. Such equipment probably does have a place in the ladies' rooms in hotels and railway stations.

Penny hand lotion dispensing equipment has been sold on the basis that many women have the habit of using one of the nationally advertised hand lotions after each washing of the hands. The lotions have a tendency to clog the machines and thus interfere with their proper operation. The profit and/or good-will possibilities are slight and hence make an installation of doubtful value.

Penny drinking cup dispensers are used by many theatres to prevent waste of the cups and to reimburse the theatre for the expense of providing the cups. Machines should be of sturdy construction and are usually owned outright.

Coin lock toilets, with or without the new sterilized toilet seats, have not been widely used in theatres up to the present time. Within the past year or two, several of the theatres with a grind policy and low admission prices in midtown New York City have installed coin locks on some of their toilets and are reported to be satisfied with the results. In general, the public has been educated to expect free clean toilet facilities in a well operated theatre. Inasmuch as theatre toilets are open to only those who have paid admission to the theatre, there seems to be little justification for making a charge for toilet facilities. This situation is altered when a coin lock is used on a toilet booth which has a toilet seat sterilizer installed. However, from trials which the writer has made with this new equipment, the public in general is not interested enough in the service to pay for it.



A STANDARD MACHINE for the vending of candy as recently introduced by a prominent service organization. Location and lighting have much to do with their potential return.

Checking lockers providing automatic parcel and clothing checking facilities for a 10c fee is a new development which appears to have real merit. An extensive trial by the RKO circuit in various types of theatres has proved quite conclusively that theatre patrons appreciate such a checking service and prefer it to the free personal service check room. Starting originally with the type of checking lockers found in most railway stations, it has been found advisable to design lockers especially for use in theatres. Such equipment is patronized best when installed in theatres located in shopping areas. Checking lockers on location are shown in the picture on page 270.

VENDING EQUIPMENT SELLING PRODUCTS CONSUMED BY THE PURCHASER:

The major part of the revenue which theatres derive from vending machines comes from the equipment vending candy, popcorn, and—within the past year—soft drinks.

In order to obtain the best possible results, there are three fundamentals which have to be observed at all times. Stated briefly, these are:

1. Proper location of equipment. Where possible, the machines should be in a place where they will be seen by everyone coming into the theatre. Usually, the equipment should not be located between the doorman and the street.
2. Attractive looking equipment possessing eye appeal.
3. Attractive display of the merchandise. The better the merchandise the better the chance of building a stable business.

Candy vending machines are the most universally used type of vending equipment in theatres. Recent improvements in design, coin mechanisms, display space, product capacity, and mechanical operation has made much of the candy vending equipment in operation today obsolete. Improved equipment will sell more candy, and thus it is short-sighted to struggle along with old machines. One of the newer type machines is illustrated in the following picture.

The greater the variety of candy available, the greater will be the sales. Candy machines holding up to 12 varieties may be had. Where the proper location is available and the volume of theatre patronage is large enough, a candy stand should be installed to take full advantage of income possibilities.

The very latest development in candy vending equipment is a candy machine which can be revolved and made into a candy stand. This means that during times when theatre attendance does not warrant the expense of a stand attendant, the candy machine will take care of the business. When business does justify a stand type operation, it can be obtained on a moment's notice by revolving the machine.

Popcorn vending equipment has been gaining in popularity in theatres of the south, middle west and southwest during the past five years. This product accounts for the largest percentage of profit on sales of any of the products vended in a theatre. Popcorn has not been popular in the larger cities.

There are two major types of popcorn machines that are in common use. The first type provides for the popping of the corn in the machine and requires an attendant. The second type uses corn that has been popped and seasoned and merely keeps the corn heated and crisp. This latter type machine is automatic in operation, uses less space, and does not require a constant attendant.

In the smaller communities, many theatre operators have found it desirable to locate the popcorn machine (usually the type requiring an attendant) at the street end of the entrance lobby, thus obtaining business from passersby, as well as theatre patrons.

Cigarette machines are a convenience in those theatres where smoking is permitted and where there is no candy stand which sells cigarettes. While the revenue is not large, the convenience to the patron is worthy of attention. The management is saved the annoyance of persons leaving the theatre to buy cigarettes.

Within the past two years several automatic soft drink machines have been developed. Most of these machines vend only one drink—Coca Cola. One manufacturer, however, has produced a machine which dispenses three different drinks. Some of these machines operate on the principle of mixing each drink as the patron drops a nickel in the proper slot. Other machines contain pre-mixed drinks and vend them as required. The relative merits of each type are expounded by their sponsors but it is still too early to tell which type will be more successful. Soft drink machines should furnish an increasing source of revenue as they become adapted to use in the theatre. At present, servicing costs are extremely high for this type of vending equipment and it appears to be much more desirable to do business with a concessionaire.

The foregoing has, at best, been but a brief description of the common types of vending machines which have been, or are being used in theatres. With the rapid growth of the vending machine industry it is incumbent on every alert theatre operator to devote some time to investigating and following the developments in this vigorous new industry.

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are not an experiment. They have proved their worth over a long period of time. If you are planning a new theatre or modernizing an old one, it will pay you to investigate our TYL-A-MAT.

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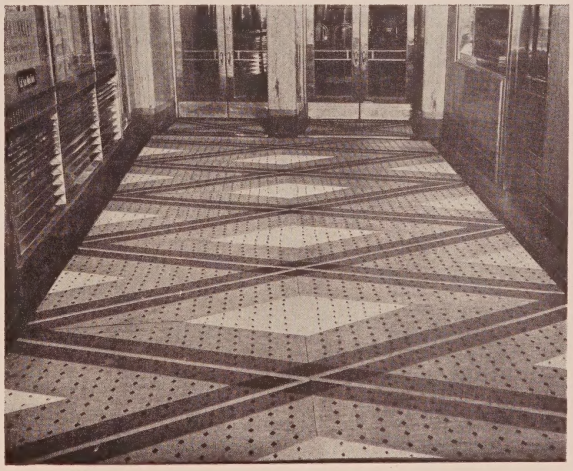

TYL-A-MAT modernistic design shown in Tribune Theatre, New York City.

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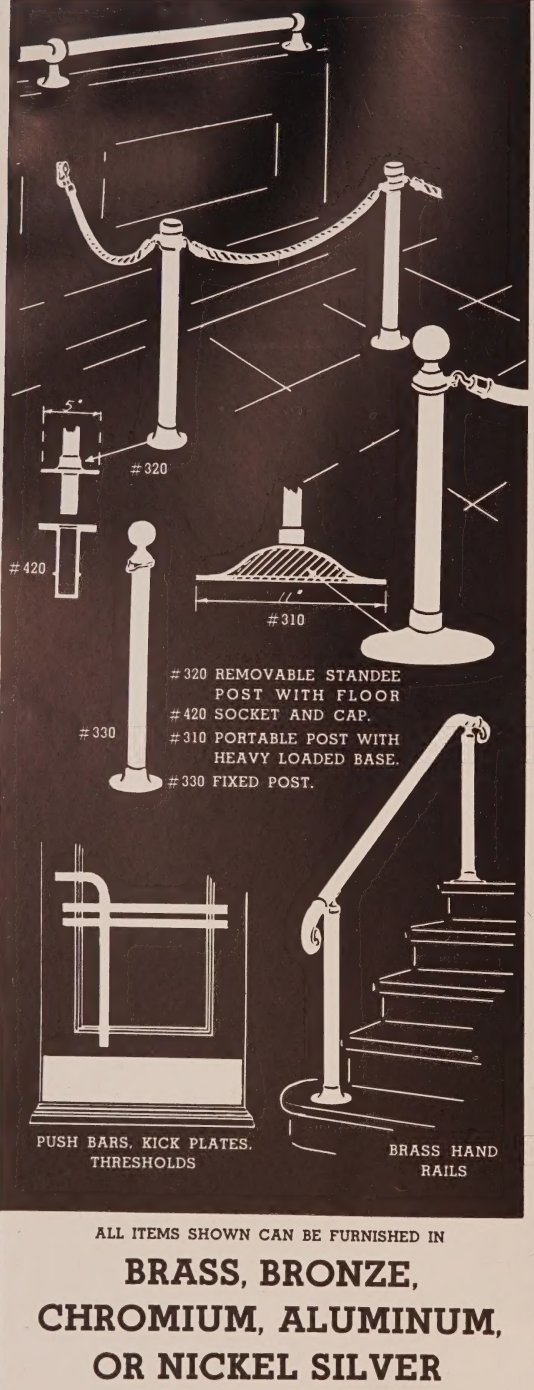

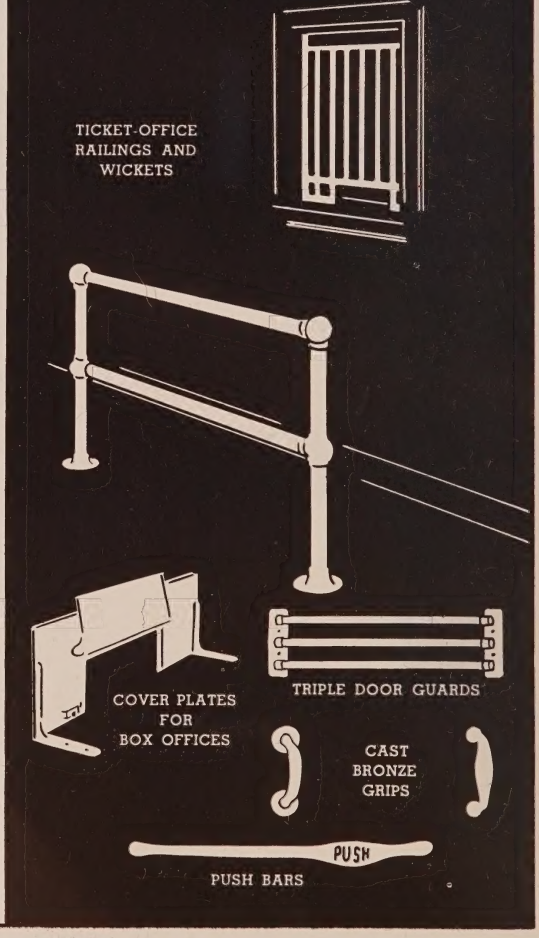

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STANDARD SIZES ALWAYS IN STOCK

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Candy Counter Operation

The Loew Poli Circuit of New England finds the personally tended stand best suited.

MOVIES and candy together present what in the film and theatre parlance of the day is called a "natural." There is a ready collaboration of the two in the business of entertainment each operating within its own field. From a survey made several years ago, it was estimated that $10,000,000 was expended in one year in theatres for five cent candy items chiefly in eastern and midwestern territories. Presuming this estimate was correct, and every man, woman and child in this country were centralized in this area, each and every one made at least one five cent purchase if they visited the theatre but once. It is not my purpose to affirm or refute the authenticity of the findings of this survey but it would indicate that the theatre candy business has outgrown its "catch-penny" days along with its embarrassing sales technique, now prohibited, and has been duly recognized as a highly specialized business.

THE theatre candy stand renders a service to the child and besides affording him the pleasure of eating it helps to keep him restive through a lengthy program; to shoppers who wish to "catch the picture" before returning home; to clerks, stenographers, and sales people who on a limited budget rush from work to the theatre before the evening prices go into effect and buy a bar as an "in-between" before going home to a late supper; and to those patrons of the theatre who desire candy for the pleasure of eating it. However, the vast majority of sales are made to theatre patrons who had no previous intention or thought of buying candy until they had entered the theatre and were attracted by the candy display.

In the Loew's Poli division, with the cooperation of Harry F. Shaw, division manager, and the managers of the individual theatres, this service is made available to every patron of the theatre. Patrons are quick to recognize any efforts made for their convenience and respond accordingly.

CANDY sales are based chiefly on eye appeal. The ideal location of candy counter is the one in direct line of vision as the patron enters the lobby with the entire display in full view. Structural layouts of lobbies and building restrictions are factors that divert from the ideal. Any effort to display the individual items in patterns or figures is rather futile in a "grab-and-take" set-up. The varied colors of the individual wrappers are utilized to lend attractiveness to the display.

The counter is constructed from the standpoint of practicability. It is possible to open and close it in a minimum of time and effort so that all available time can be devoted to making sales. The practice of setting up the display at opening and taking it down at closing is not only a tiring procedure but is detrimental to sales. The shelvings are so arranged that all items are clearly visible and accessible both to the attendant and to the patron facilitating refilling to one and reducing sales resistance to the other. There is ample space for reserve stock so that under normal conditions the attendant is not required to leave the stand to replenish her stock after the theatre is opened. Garishness in ornamentation is avoided. Solidity of structure and harmony with its surroundings is preferred and the lighting effective. The width of the counter is regulated according to the available space, however, a counter exceeding six feet in width is apt to prove unwieldy to a single attendant.

A PERSONALLY ATTENDED COUNTER as recently constructed in the lobby of one of the Loew-Poli Theatres of New England. Careful attention is given to cleanliness and to the charm and efficiency of the employee.

THE girl attendant must possess a good personality. Insistence is made that she be clean, well-groomed, alert, patient, and courteous. Prettiness is no objection if combined with the other qualities. The rules and regulations the attendant is required to follow are the same that are in effect in any well conducted candy shop:

She must be punctual in opening the stand and must not close before the set closing time.

Chewing of gum or reading while on duty is prohibited.

The uniform, which is supplied, must be worn while on duty. It must be kept neat and clean. A tendency to the "bizarre" in uniforms is scrupulously avoided.

Social visits of friends or relatives must be brief.

The attendant must not wander away from the counter.

DUE to the stationary nature of her work, the candy attendant is a natural source of information to theatre patrons. It is, therefore, incumbent upon her to be familiar with the layout of the theatre in regard to lounge rooms, location of telephones, etc., the feature hours, lost and found procedure, and similar details of service that arise in the theatre. This is a service the patrons appreciate and promotes good will.

GREAT care is given in stocking a stand. With the clientele limited to theatre patrons numbering a large percentage of "regulars", special precaution is taken in not overstocking so that the turnover is commensurate with the freshness and wholesomeness of the product.

It might also be said here that pains might be taken in stocking the stands for the different types of pictures which naturally attract different types of audiences. For a "class" picture, the type that appeals to the occasional movie-goer—"Life Savers" get a play; for the Robert Taylor, Clark Gable, and Tyrone Power pictures—chocolate mints and bon bons are in demand; for comedies—roll candy and jellies seem to attract most; for westerns and blood-and-thunder pictures—hard candies are the vogue, while for kid pictures—the biggest bars available get a play.

The merchandise stocked is all part of an available list, with each item meeting a minimum weekly demand in the majority of the many theatres operated by the circuit. The stands are stocked according to the proven tastes of the patrons of the individual theatres.

PROFIT is based on keen merchandising and volume buying. Great care must be exercized by the buyer as this is the very foundation of the enterprise. Depending upon the sale of a single commodity, limited to a restricted clientele fluctuating according to the drawing power of the entertainment offered, the candy stand is truly "on its own." The sale of chewing gum is prohibited, and the sale of cigarettes negligible. Potential buyers that form street lines or fill lobbies when all seats are taken are lost in the rush when seats become available. Fixed charges cost of operation and shrinkage—all these factors must be borne in mind if the buyer is to exist, not alone prosper.

And, to sum it all up, everyone must agree that the theatre candy business is certainly a "sweet" business.

The Industry Must Hold First Place

One of the top spot management executives of the country gives his views on progress.

BY FRANK H. (RICK) RICKETSON, JR.

ONE good idea—one good innovation—one revolutionary development such as that which carried the exhibitor from the nickelodeon to the silent feature attraction; from the storeroom theatre to the modern showhouses; then large orchestras; then deluxe production; then sound, and later, Bank Nights, will do more for the box office than any improvement of economic conditions that can be conceived. It wasn't economic conditions that doomed the old opera house. The old opera house manager couldn't see the possibilities of the flicker film and he passed from the picture. It wasn't economic conditions that shrunk grosses in the closing years of the silent motion picture. The silent film had lost its novelty. The industry had become stagnate and silent pictures had lost a portion of their wide appeal.

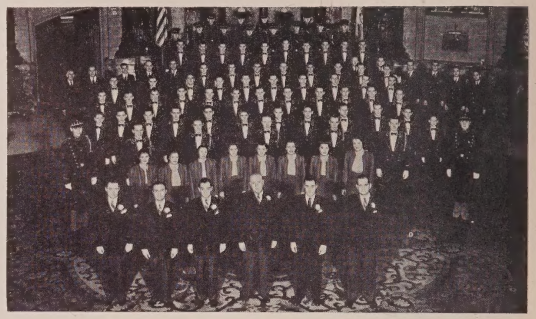
IF the high level of public interest in the motion picture is receding today, it is not alone because of economic conditions. The most important factor probably is sameness and staleness within the industry. Showmanship, eternally calling for the new and the different, has lost some of its originality and glamour. Our industry is starving for new ideas.

SINCE time began, human beings always have searched for entertainment. Today, they are searching for enjoyment in larger numbers than ever before. There is no form of pleasure that has a monopoly upon the public's leisure. Public taste always has been widely diversified and the competition for public favor always has been keen. The preference shown the motion picture over other competitive enterprises is due entirely to the quality of our entertainment and our promise to better satisfy and amuse. Today, we have all the old competitors, with some new ones: radio, night baseball, motoring, bowling, and a wide variety of sports in which the public may participate at its leisure. Our old routine approach is losing some of its power to attract. The importance of the motion picture is being lessened. We must search for the new and the different to hold as large a percentage of the public as before. We must put imagination into our showmanship if we are to enjoy the prosperity of previous years.

THE average exhibitor is entirely too dependent upon the Hollywood producer. Unfortunately, exhibition has become nationalized. Too seldom do we hear of the showman who put over the feature picture which failed nationally. The distributor has repeated the statement so often—"If a picture is a success nationally, it will be a success in almost any locality," that he now is convinced it is true. This has destroyed the exhibitor's initiative and ingenuity. The exhibitor too quickly has accepted this statement as correct and his importance as a showman has diminished.

HOLLYWOOD, likewise, hasn't proved that it has the answer. Our patrons are crying for new faces and more entertainment. Old plots and old themes are rehashed and reproduced.

Frank H. (Rick) Ricketson, Jr., was born in Leavenworth, Kansas, Oct. 22, 1896, and educated in the Leavenworth public schools. He attended the University of Kentucky and the Westminster Law School. His first industry position was as exploitation man for Famous Players Lasky Corporation, after reporting for Kansas City and Denver papers and writing sports for the Denver Post. He later founded D. and R. Theatres and became president of Consolidated Theatres. He managed, owned, or operated over 100 theatres in the Rocky Mountain Region; and, with Charles U. Yaeger, developed "Bank Night." Now president of Fox Inter-Mountain Theatres, Inc., he is also secretary of Affiliated Enterprises, Inc., and author of "The Management of Motion Picture Theatres.

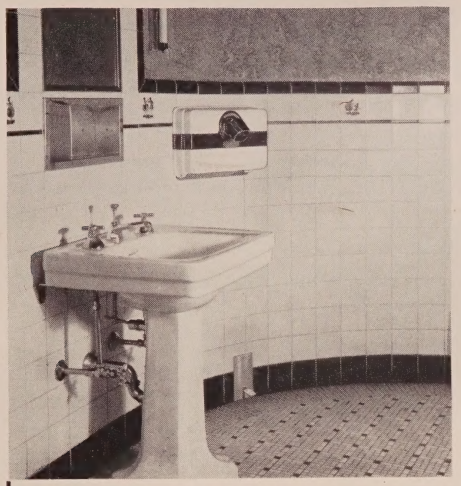


A DELUXE MANAGEMENT AND MAINTENANCE STAFF. **Here illustrated is the complete service personnel of the Roxy Theatre, New York, assembled in the world-renowned grand foyer of that theatre.**

Since the advent of sound, the producers have come forth only with a few new ideas, namely, the musical picture, the occasional color production, the cartoon feature such as "Snow White," and a few road-show attractions such as "Gone With the Wind." Each of these new picture ideas has sustained and has widened our box-office possibilities. But the ideas and new story themes do not come fast enough. A dozen or so producers, successful and entrenched, are putting their brand on the 300-400 feature pictures that are produced each year, copying and remaking, and immediately exhausting, any new idea or thought, while 15,000 showmen and 80,000,000 patrons are crying for something different—something new—a departure from the old routine.

WE must return to the methods of original exploitation which made stars overnight of such personalities as Maurice Chevalier and Pola Negri. The industry must find a method to develop 50 important new personalities each year. Many of our screen luminaries have grown old to the public. Each individual showman must assume his full responsibility in developing new personalities, encouraging the producer to venture forth with new names and new faces. Each major studio should produce each year, two pictures with a complete cast of new faces. These pictures should have the benefit of the best writers, the best stories and ample production money. It then should be the duty of the exhibitors to apply the showmanship necessary to sell and definitely establish these new personalities for the easiest thing to sell once is something new. Curiosity has the strongest of all appeal to the ticket buying public. Out of a dozen such pictures a year—attractions on which the studios spend real money, place excellent writers and directors—Hollywood will develop new personalities to carry the industry. At the present time, each year we are developing only a few new stars when the public and 15,000 screens are crying for many fresh, new personalities.

UNLESS Hollywood senses the public demand, it is not unlikely that exhibition will be forced to look to other sources for the box-office magnet of the future. Television may be that new development. Third dimension pictures are a possibility. In any event, the showman of the future cannot accept his present source of supply as final or the entertainment business may shift from the motion picture theatre to other amusements as it did from the opera house to the motion picture theatre. The people make their choice, and only so long as we hold their first place in public opinion will the motion picture industry retain its present position as the chief source of entertainment, relaxation and escape for millions of persons. No longer can the modern showman accept the admonition of the producer-distributor that a picture failure nationally is a picture failure everywhere. The showman must be the master of his own destiny!



Showing SANI-DRI Model "SR-W" in a typical convenient washroom layout.

The Pan-Pacific Auditorium washrooms are equipped with SANI-DRI.

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"MORE THAN A DRYING SERVICE"

KEEPS WASHROOMS CLEANER

SANI-DRI *automatically* keeps washrooms cleaner—free from unsightly towel-litter. Washroom service requirements and costs are *greatly reduced*—savings of 90% are assured.

SANI-DRI PROTECTS AGAINST A DANGEROUS FIRE-HAZARD

Towel-strewn washrooms are a serious fire-hazard—awaiting only a carelessly dropped cigarette or match to start a dangerous blaze and panic. SANI-DRI *eliminates* this fire-risk.

SANI-DRI, always ready for use, *automatically* provides *continuously dependable* drying service. With SANI-DRI there is no need to service the washroom—to empty soiled towel receptacles and fill towel-cabinets. SANI-DRI dries with electrically heated air, *quickly* and *thoroughly*—it is *most sanitary*—there is nothing to carry contamination from one user to another. SANI-DRI eliminates the necessity of defacing walls with unsightly towel-cabinets and receptacles.

"FR-W" ESPECIALLY DESIGNED FOR THEATRE WASHROOMS

SANI-DRI Model "FR-W" (full-recessed) is *particularly suited* to theatre washroom requirements. It saves room-space and the full-recessed foot-pedal protects against accidental or deliberate damage. Other models, "SR-W" (semi-recessed), and "SF" (pedestal model) are also available to meet the conditions of any washroom layout.

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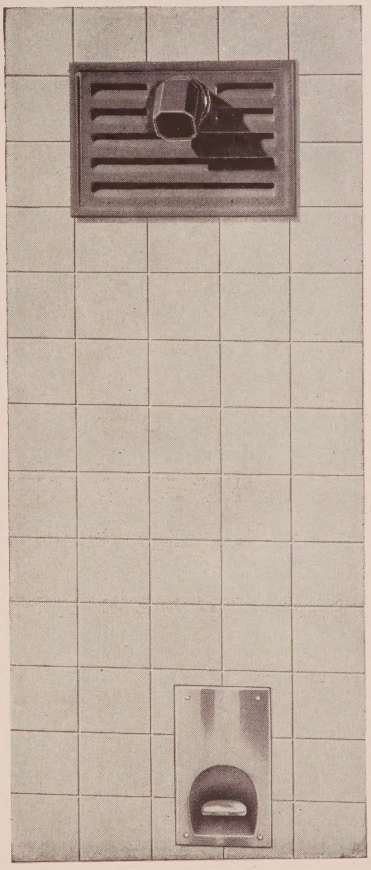
State Theatre, Okla. City, Okla.
Orpheum Theatre, Huntington, W. Va.
Cleveland News Reel Theatres, Inc., Cleveland
Midwest News Reel Theatres Co., Chicago
Marshall Square Theatre, Chicago
Varsity Theatre, Lincoln, Nebr.
State Theatre, Sandusky, Ohio
Stadium Theatre, Evanston, Ill.
Uptown Theatre, Chicago
Oakley Theatre, Chicago
Monroe Theatre, Chicago
Sun Theatre, Chicago
California Theatre, Chicago
De Luxe Theatre, Chicago
Ark Theatre, Chicago
Howard Theatre, Chicago
Norshore Theatre, Chicago
Oak Theatre, Chicago
Olympia Theatre, Chicago
Woodlawn Theatre, Chicago
Woods Theatre, Chicago
Illington Theatre, Chicago
Portage Theatre, Chicago



DEPENDABLE SINCE 1897

At right: SANI-DRI Model "FR-W", especially designed for theatre washrooms.

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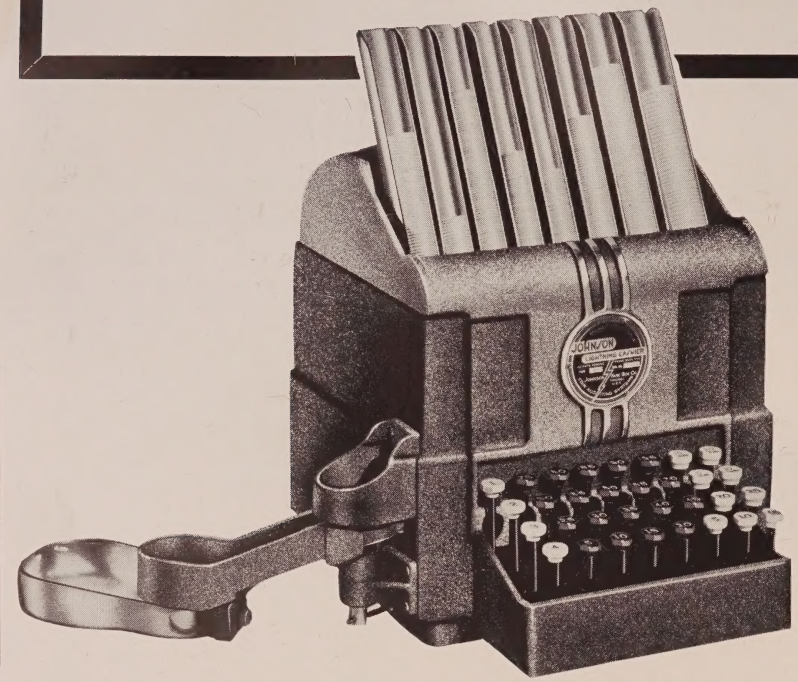
MAKE CHANGE WITH NICKELS INSTEAD OF DIMES AND *Increase* LOBBY VENDING MACHINE *Sales*



JOHNSON FARE BOX CO.

Provide patrons with MORE NICKELS and every coin-operated merchandise vendor in your theatre lobby can PAY EXTRAORDINARY PROFITS. The Model T-67 Johnson Lightning Cashier illustrated at left, **automatically** makes change in nickels instead of dimes . . . thereby multiplying vending machine sales which would otherwise be lost because of inconvenience in obtaining five-cent pieces.

New Model T-67 JOHNSON LIGHTNING CASHIER

★ In addition to stimulating vending machine trade, this new Model T-67 Johnson Lightning Cashier faithfully performs an exacting every-day task of making change. Saves more than its original cost by preventing mistakes. Saves time. Eliminates customer-losing arguments. Yes, you gain the advantage of replacing your old change-maker with a brand NEW Johnson Lightning Cashier that will speed up the ticket line—keep your window free of congestion and confusion — virtually, without cost, PAY BACK YOUR ENTIRE INVESTMENT through INCREASED VENDOR SALES alone!

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Does Remodeling Help Grosses?

A survey of leading independent circuit heads discloses a unanimous opinion in the affirmative.

DO remodeling and renovating help theatre grosses? THE THEATRE CATALOG editors asked this question of New York City circuit executive Bernard Brandt, veteran New York State exhibitor M. J. Kallet, New England circuit executive Kenneth Kurson, circuit head A. E. Lichtman of the middle south, Connecticut theatreman Albert Pickus, and Pennsylvania exhibitor Lewen Pizor.

From each of these men, experts in their field, came the same answer—an affirmative "yes." Remodeling and renovation are not cure-alls, they said. If the product is unappealing attendance will be small, regardless of what physical attractions the house has to offer. But, on the other hand, to quote Bernard Brandt, "Business in a newly-renovated theatre picks up if your competitor is showing the same type of product as you. If you both show the same general class of films, your better-looking house will draw many of the patrons who usually paid admissions across the street." Add to this the good will earned by the exhibitor who concerns himself with the comfort of his patrons and the beautification of the neighborhood, and you have several excellent reasons for getting to work on those renovations that you've been thinking about for years.

* * * * *

FROM A. E. Lichtman, head of the southern circuit bearing his name—a group of 22 theatres from the District of Columbia through Virginia and into North Carolina—came this interesting statement:

"In all of my experience in the operation of theatres, while the fundamental basis is pictures, this, in itself, is not enough to commandeer the principal attention of any community. Along with pictures, it is necessary that the environment of the theatre be maintained at a high standard at all times.

"It is, therefore, highly important that the theatre be kept in the best possible condition, and it has been found highly profitable from time to time, in addition to the ordinary maintenance, to completely rebuild a building in order to keep pace with the ever changing tastes of the public.

"We have in some cases found it also to be profitable to enlarge the seating capacity of the auditorium slightly. Very naturally, this entailed the expenditure of a large sum of money, which, on the face of it, would not seem to be, from a standpoint of construction cost per seat, economically sound, but has paid for itself in the increased receipts, and has created many friends among our patrons by showing that we want to take care of the maximum number of people at all times."

Lichtman continued: "We have at times taken over theatres that were terribly run down, and have completely rebuilt them and supplied the niceties that some showmen think are luxuries, such as draperies, carpets, rest rooms with appropriate furnishings, and the like. All of this has helped us build and receive good will among the population of the community in which the theatre was situated."

This, then, was the opinion of a man with 20 years of experience in the theatre business—one of the most important Eastern theatre men, whose prominence exceeds territorial limits, and whose name is known to exhibitors and film men throughout the country.

* * * * *

IN a few words, M. J. Kallet, president, Kallet Theatres, Inc., and one of the veterans in the exhibition business in the Central New York State area, summed up the remodeling and renovating situation as it applies to the many theatres which he has done over.

"It has been our experience that when we remodel or redecorate a theatre, we have always gotten a substantial return."

Kallet even cited some cases where business jumped as much as 30 per cent—although it must be understood that that is far from the normal figure.

He continued: "The usual motive for renovation is to keep the theatres modern and up-to-date at all times, which offsets competition. But even theatres in closed situations are being renovated, as it is our policy to set the pace and thereby secure local good will."

To the exhibitor who complains that remodeling will not overcome his run handicap, Kallet suggested that while this is true, the alterations will, nevertheless, put the exhibitor on a basis where he will have the same environment to offer as the first runs have. Under these conditions, he will be able to say to his patrons: "I may not be able to show you the pictures as soon as they are released, but I can match and maybe top every physical comfort you get in the downtown deluxe houses—and my prices are very much lower."

A THOROUGH REJUVENATION. Showing through before and after views how a modest expenditure, skillfully invested, can convert a shabby, old theatre into a sparkling new one. The Majestic Theatre, West Springfield, Mass., was typical of many such theatres which do not keep in tune with the times. Under the supervision of the Capitol Theatre Supply Company of Boston, Mass., a large modern marquee with changeable silhouette letter attraction boards replaced the old fashioned pill box atrocity. New lobby frames of Colonial design, modern entrance doors, and an outside trim of cadet blue vitrolite glass, performed a face lifting operation of real effectiveness.

ONE of the strongest arguments in favor of remodeling and renovation came from Lewen Pizor, a veteran of 28 years' experience in the business, and the operator of 14 houses in the Philadelphia and Eastern Pennsylvania area. Referring to an expenditure of between $300,000 and $400,000 for the renovation of his houses, Pizor said:

"One might ask, naturally, if I feel that this expensive program of modernization and renovation has proved worth while. I am spending my 28th year in the business, and although the field was never so competitive, there was never a time that I did not know that every dollar spent in renovation and modernization of a house was being invested wisely. Some say that the picture means the difference between profit and loss, but it became apparent to me very early in my experience that even the best picture could not attract patrons to a house which was not inviting and comfortable.

"Even now, in situations where the run is not of the best, the houses are on the profit side of the ledger solely because the people of the neighborhoods have come to learn that it pays to wait to see a picture in a clean, modern, up-to-date theatre, equipped with the best mechanisms money can buy and so inviting they have become real family institutions."

And, in conclusion, Pizor stated: "Each theatre represents a different type of operation, and every exhibitor's problems are his own, but there can be a blanket rule about renovation, modernization, and maintenance. Don't look at the money spent to keep your houses up to date as an expenditure of the moment—it is more than that. It represents confidence in the future of our business and a permanent advertisement to your patrons that you are doing everything within your power to make your theatre the best there is."

* * * * *

BERNARD BRANDT, equipment purchaser for more than 80 Brandt circuit houses in the New York metropolitan area, who was quoted previously in this symposium, also suggested this advantage of remodeling and renovation: "In an extremely competitive situation, where there are several theatres from which the patrons may buy tickets, a newly-renovated house can keep its head well above water by showing pretty-good to fair films rather than the top-bracket smashes."

As far as Brandt is concerned, however, the ideal situation is where good pictures are shown in a beautiful theatre—with both elements co-operating to attract audiences and help raise grosses.

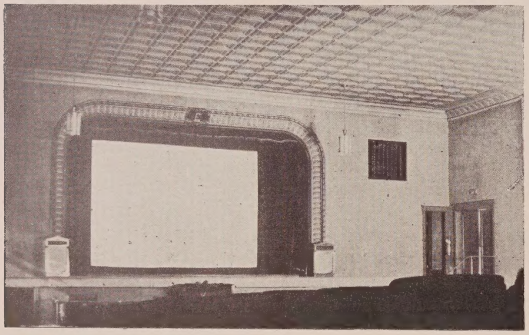
* * * * *

THE remaining two exhibitors who were interviewed have both manifested their belief in renovation and remodeling by continually striving to keep the houses under their control as modern, comfortable, and audience-attracting as possible.

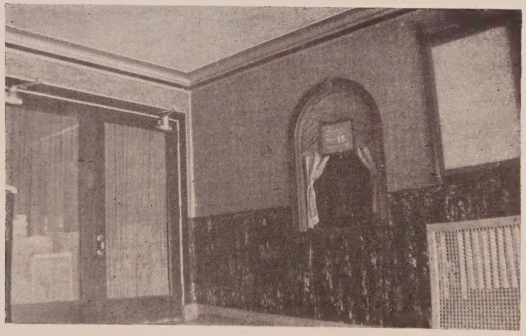
Albert M. Pickus, who has been exhibiting films at the Stratford, Stratford, Conn., for 15 years, recently spent $30,000 to give his town of 25,000 population what the townspeople call "The Theatre of the Future." In his opinion, this expenditure was more than justified, and the returns in attendance and good will have been gratifying. Take it from Pickus that plain warm colors, properly blended and skillfully lighted, Acoustone sidewalls, and plain soft blending carpeting, plus modern staggered seating, are elements of theatre design and comfort that will warm the heart of any patron, and encourage return visits.

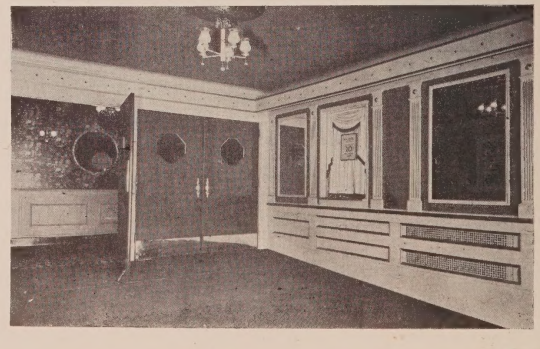
Kenneth Kurson, field supervisor for the Graphic circuit of 17 New England houses, is another industryite who is a staunch believer in remodeling and renovating. Working on a limited budget, the Graphic houses nevertheless have their faces lifted every spring. The houses are freshened up and the patron met by new color schemes, with new moldings, new advertising frames, repainted marquees, and changed drapes. The circuit prides itself on adapting its houses to the seasonal illusion—with each change a miniature job of remodeling and renovating.

With the latter, this symposium comes to an end. Six men, experts in the business of exhibiting motion pictures. have shown that remodeling and renovating do help theatre grosses—and aid the exhibitor also in countless other ways. Certainly not the least of these is the inevitable inflation which must come to the ego of the exhibitor who stands in his newly renovated house, sees the fine new plush seats filled with comfortable, contented patrons, and realizes that in renovating his theatre, he has done a service, not only to his patrons and his community, but also to himself.



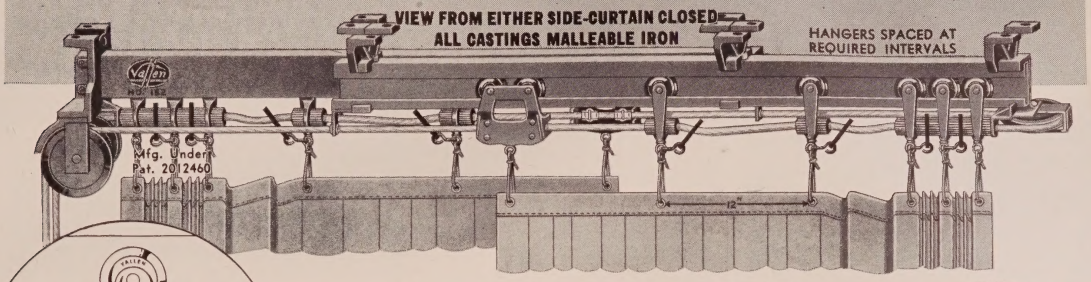
BEFORE AND AFTER. The auditorium was reminiscent of 20 or more years ago with the old fashioned proscenium topped by an initial of some now forgotten, former name. A skillful decorating job which included new lighting fixtures, painted fluting of the pilasters, a modern and effective stage curtain and drapery installation, and ornamental curved corners to mask the exit doors and eliminate unusable seats, created a major metamorphosis. New modern chairs, fluorescent carpeting lighted from the ceiling, and damask over acoustical wool completed the effect and greatly enhanced the acoustics. Equally effective was the modernizing of the entrance lobby and foyer. The admission sign indicates that the project was self liquidating for it permitted a 5c increase in the admission scale.

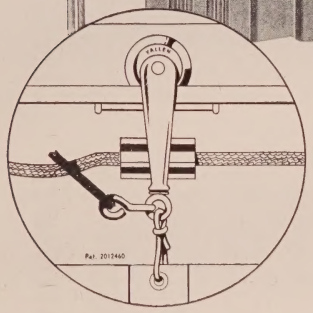




Vallen ALL-STEEL CURTAIN TRACKS

And Automatic Controls

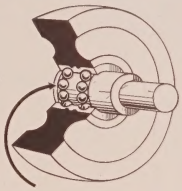




Vallen Rear Fold Attachment

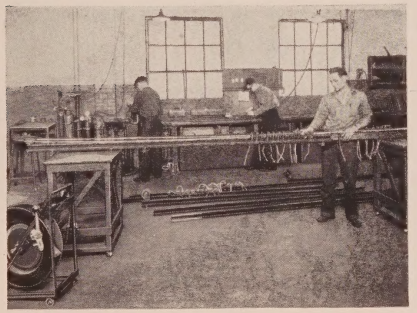
The Vallen Rear-Fold

One of the greatest innovations in the manufacture of curtain equipment is the Vallen Rear-Fold Feature (illustrated in circle). Sensational in its performance, it has filled a long felt want in the curtain field. This patented characteristic produces a spectacular and unusual effect and actually adds years to the life of costly curtain fabric. The Vallen rear-fold feature allows curtains to move back as one smooth ungathered surface, all folding takes place at the extreme ends of the track and never within view of the audience. The Vallen rear-fold mechanism is in no way cumbersome, adds no extra weight to the track and requires no additional power.

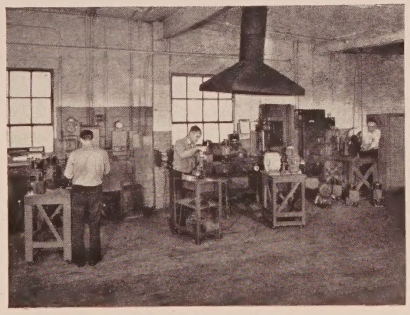


Two rows of ball bearings in the hub of the wheel (where they should be) assures smooth, noiseless action. No lubrication required.

VALLEN, INC.



Final Inspection and Assembly of Tracks



Wiring and Testing Controls

WERE you to visit the Vallen factory you would be immediately impressed at the methods employed to insure the perfection of Vallen All Steel Curtain Tracks. Each part is inspected and tested under the most careful supervision. As Vallen Tracks are assembled to specific requirements each operation is checked with the utmost care. Skilled workmen having a knowledge that comes only from long study and experience are employed here. Knowing how essential each mechanical part is to the smooth operation of the finished Track, every precaution is taken to insure maximum efficiency. The world-wide satisfactory performance of these installations under all conditions is a tribute to their durability and smooth operation.

To guarantee satisfactory operation of Vallen Control equipment a special Wiring & Testing Department has been installed in our plant. Here modern scientific testing apparatus is employed to further insure the speedy, smooth operation of Vallen controls. Realizing that only through constant and careful supervision can the inbuilt quality of Vallen Controls be maintained, we have endeavored to employ only the most capable and skilled workmen. All Vallen Controls are wired and tested by carefully trained men having years of experience within our own plant. The world-wide success of Vallen equipment testifies to the fact that *Vallen* is the name to remember when the need arises for any type of curtain control equipment.

Without obligation, our engineers will gladly assist you in solving any curtain operating problem.

THE SEAL OF LEADERSHIP
Vallen
WORLD'S LEADING MAKER OF CURTAIN CONTROLS AND TRACKS
SPECIAL OPERATING DEVICES

MANUFACTURED BY

VALLEN INC., AKRON, OHIO

AIR CONDIT.

The Perpetual Clearance Calendar

As originally prepared by JAY EMANUEL PUBLICATIONS over four years ago, this easy method has spread and been copied throughout the industry.

EVERY one who has ever booked a motion picture remembers the practice of counting fingers or standing before a calendar and counting the days in order to arrive at the proper clearance or availability date when more than one month must be considered. The old class room jingle "30 days has September, etc." would go racing through one's brain until it reached the affected months only to be followed by some rather confusing mental arithmetic.

To simplify all this, Fred Bund, Jr., district manager, U. S. Army Motion Picture Service, brought to our attention a chart to make all this easier. That it has merit is best indicated by the fact that its fame spread from coast to coast so that few film exchange bookers are without one. Requests for copies have been received from as far away as Australia and only recently substantiate this method that even the above is subject to criticism. But, regardless, use of this calendar seems to be unanimous by all who have seen it.

HOW TO USE IT

To find the availability date of a picture, add the clearance period to the heavy black number following the date upon which the prior run completes its exhibition. The date opposite the total thus obtained is the availability date for the subsequent run.

As an example: we will suppose that the first run closes April 16. We will assume that the clearance period over the second run is 105 days. The heavy black number after April 16 is 106. Add the 105 day clearance to 106 for a total of 211. By referring on the calendar to 211, we find that the availability date is July 30.

JAN.	FEB.*	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.*	MAR.	APR.	MAY	JUNE
1 **1**	1 **32**	1 **60**	1 **91**	1 **121**	1 **152**	1 **182**	1 **213**	1 **244**	1 **274**	1 **305**	1 **335**	1 **366**	1 **397**	1 **425**	1 **456**	1 **486**	1 **517**
2 **2**	2 **33**	2 **61**	2 **92**	2 **122**	2 **153**	2 **183**	2 **214**	2 **245**	2 **275**	2 **306**	2 **336**	2 **367**	2 **398**	2 **426**	2 **457**	2 **487**	2 **518**
3 **3**	3 **34**	3 **62**	3 **93**	3 **123**	3 **154**	3 **184**	3 **215**	3 **246**	3 **276**	3 **307**	3 **337**	3 **368**	3 **399**	3 **427**	3 **458**	3 **488**	3 **519**
4 **4**	4 **35**	4 **63**	4 **94**	4 **124**	4 **155**	4 **185**	4 **216**	4 **247**	4 **277**	4 **308**	4 **338**	4 **369**	4 **400**	4 **428**	4 **459**	4 **489**	4 **520**
5 **5**	5 **36**	5 **64**	5 **95**	5 **125**	5 **156**	5 **186**	5 **217**	5 **248**	5 **278**	5 **309**	5 **339**	5 **370**	5 **401**	5 **429**	5 **460**	5 **490**	5 **521**
6 **6**	6 **37**	6 **65**	6 **96**	6 **126**	6 **157**	6 **187**	6 **218**	6 **249**	6 **279**	6 **310**	6 **340**	6 **371**	6 **402**	6 **430**	6 **461**	6 **491**	6 **522**
7 **7**	7 **38**	7 **66**	7 **97**	7 **127**	7 **158**	7 **188**	7 **219**	7 **250**	7 **280**	7 **311**	7 **341**	7 **372**	7 **403**	7 **431**	7 **462**	7 **492**	7 **523**
8 **8**	8 **39**	8 **67**	8 **98**	8 **128**	8 **159**	8 **189**	8 **220**	8 **251**	8 **281**	8 **312**	8 **342**	8 **373**	8 **404**	8 **432**	8 **463**	8 **493**	8 **524**
9 **9**	9 **40**	9 **68**	9 **99**	9 **129**	9 **160**	9 **190**	9 **221**	9 **252**	9 **282**	9 **313**	9 **343**	9 **374**	9 **405**	9 **433**	9 **464**	9 **494**	9 **525**
10 **10**	10 **41**	10 **69**	10 **100**	10 **130**	10 **161**	10 **191**	10 **222**	10 **253**	10 **283**	10 **314**	10 **344**	10 **375**	10 **406**	10 **434**	10 **465**	10 **495**	10 **526**
11 **11**	11 **42**	11 **70**	11 **101**	11 **131**	11 **162**	11 **192**	11 **223**	11 **254**	11 **284**	11 **315**	11 **345**	11 **376**	11 **407**	11 **435**	11 **366**	11 **496**	11 **527**
12 **12**	12 **43**	12 **71**	12 **102**	12 **132**	12 **163**	12 **193**	12 **224**	12 **255**	12 **285**	12 **316**	12 **346**	12 **377**	12 **408**	12 **436**	12 **467**	12 **497**	12 **528**
13 **13**	13 **44**	13 **72**	13 **103**	13 **133**	13 **164**	13 **194**	13 **225**	13 **256**	13 **286**	13 **317**	13 **347**	13 **378**	13 **409**	13 **437**	13 **468**	13 **498**	13 **529**
14 **14**	14 **45**	14 **73**	14 **104**	14 **134**	14 **165**	14 **195**	14 **226**	14 **257**	14 **287**	14 **318**	14 **348**	14 **379**	14 **410**	14 **438**	14 **469**	14 **499**	14 **530**
15 **15**	15 **46**	15 **74**	15 **105**	15 **135**	15 **166**	15 **196**	15 **227**	15 **258**	15 **288**	15 **319**	15 **349**	15 **380**	15 **411**	15 **439**	15 **470**	15 **500**	15 **531**
16 **16**	16 **47**	16 **75**	16 **106**	16 **136**	16 **167**	16 **197**	16 **228**	16 **259**	16 **289**	16 **320**	16 **350**	16 **381**	16 **412**	16 **440**	16 **471**	16 **501**	16 **532**
17 **17**	17 **48**	17 **76**	17 **107**	17 **137**	17 **168**	17 **198**	17 **229**	17 **260**	17 **290**	17 **321**	17 **351**	17 **382**	17 **413**	17 **441**	17 **472**	17 **502**	17 **533**
18 **18**	18 **49**	18 **77**	18 **108**	18 **138**	18 **169**	18 **199**	18 **230**	18 **261**	18 **291**	18 **322**	18 **352**	18 **383**	18 **414**	18 **442**	18 **473**	18 **503**	18 **534**
19 **19**	19 **50**	19 **78**	19 **109**	19 **139**	19 **170**	19 **200**	19 **231**	19 **262**	19 **292**	19 **323**	19 **353**	19 **384**	19 **415**	19 **443**	19 **474**	19 **504**	19 **535**
20 **20**	20 **51**	20 **79**	20 **110**	20 **140**	20 **171**	20 **201**	20 **232**	20 **263**	20 **293**	20 **324**	20 **354**	20 **385**	20 **416**	20 **444**	20 **475**	20 **505**	20 **536**
21 **21**	21 **52**	21 **80**	21 **111**	21 **141**	21 **172**	21 **202**	21 **233**	21 **264**	21 **204**	21 **325**	21 **355**	21 **386**	21 **417**	21 **445**	21 **476**	21 **506**	21 **537**
22 **22**	22 **53**	22 **81**	22 **112**	22 **142**	22 **173**	22 **203**	22 **234**	22 **265**	22 **295**	22 **326**	22 **356**	22 **387**	22 **418**	22 **446**	22 **477**	22 **507**	22 **538**
23 **23**	23 **54**	23 **82**	23 **113**	23 **143**	23 **174**	23 **204**	23 **235**	23 **266**	23 **296**	23 **327**	23 **357**	23 **388**	23 **419**	23 **447**	23 **478**	23 **508**	23 **539**
24 **24**	24 **55**	24 **83**	24 **114**	24 **144**	24 **175**	24 **205**	24 **236**	24 **267**	24 **297**	24 **328**	24 **358**	24 **389**	24 **420**	24 **448**	24 **479**	24 **509**	24 **540**
25 **25**	25 **56**	25 **84**	25 **115**	25 **145**	25 **176**	25 **206**	25 **237**	25 **268**	25 **298**	25 **329**	25 **359**	25 **390**	25 **421**	25 **449**	25 **480**	25 **510**	25 **541**
26 **26**	26 **57**	26 **85**	26 **116**	26 **146**	26 **177**	26 **207**	26 **238**	26 **269**	26 **299**	26 **330**	26 **360**	26 **391**	26 **422**	26 **450**	26 **481**	26 **511**	26 **542**
27 **27**	27 **58**	27 **86**	27 **117**	27 **147**	27 **178**	27 **208**	27 **239**	27 **270**	27 **300**	27 **331**	27 **361**	27 **392**	27 **423**	27 **451**	27 **482**	27 **512**	27 **543**
28 **28**	28 **59**	28 **87**	28 **118**	28 **148**	28 **179**	28 **209**	28 **240**	28 **271**	28 **301**	28 **332**	28 **362**	28 **393**	28 **424**	28 **452**	28 **483**	28 **513**	28 **544**
29 **29**		29 **88**	29 **119**	29 **149**	29 **180**	29 **210**	29 **241**	29 **272**	29 **302**	29 **333**	29 **363**	29 **394**		29 **453**	29 **484**	29 **514**	29 **545**
30 **30**		30 **89**	30 **120**	30 **150**	30 **181**	30 **211**	30 **242**	30 **273**	30 **303**	30 **334**	30 **364**	30 **395**		30 **454**	30 **485**	30 **515**	30 **546**
31 **31**		31 **90**		31 **151**		31 **212**	31 **243**		31 **304**		31 **365**	31 **396**		31 **455**		31 **516**	

it was used as the piece de resistance in a bookkeeping book assembled by one of the leading American publishers.

THE man who brought this to our attention does not claim to have originated it, and, for that matter, we don't know who should be credited with the original idea, but it seems to us that in its present form this will save bookers and others plenty of headaches. Then again, with many cases being filed under the Motion Picture Tribunals of the consent decree, it is becoming noticeable that clearance is an important topic of dispute in all sections of the country. This, too, makes the calendar ultra-important.

Clearance, itself, is really a topic about which books can be written, and the writer has often wondered how the basis for clearance originally was established. In some sections of the country, after a picture breaks in a subsequent run, the clearance is on the principle of seven days for every five cents change in admission, but in other areas, the difference is on a month for the same difference. Clearance, itself, can't be disputed, for it must generally be admitted that the house which can pay more for film should get clearance over a theatre with lesser admission, although there are so many cases where the facts do not

In many situations, the clearance period is counted not from the last day of the prior run but from the day after that. In this case, it is a simple matter to add one day or as in the above example, use April 17 and 107 as the initial date.

In the case of a Leap Year, just move the availability date forward one day when February enters the equation.

EDITOR'S NOTE: A supply of the above calendars, printed on cardboard in the size of 8½ by 11 inches, is available to anyone in motion picture industry requesting same and enclosing a three cent stamp to cover postage. Merely address a request to Jay Emanuel Publications, Inc., 1225 Vine Street, Philadelphia, Pa., and it will receive prompt attention by return mail. This is one of many free services which have been created and made available to the industry in over 22 years of motion picture publication experience.

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13 States

- where only 25% of the Nation's theatres—
- contain over 36% of the Nation's theatre seats
- and do 41% of the Nation's gross business.

13 States

- where admission scales are higher
- where theatres are larger
- where hours of operation are longer per day
- and where deluxe policies demand the best in new equipment and supplies.

13 States

- where THE EXHIBITOR for over 22 years has outstripped every other trade journal in Reader Interest, Reader Service, and Paid Circulation.

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THE THEATRE CATALOG

★

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AIR CONDIT.

Simplified Theatre Bookkeeping

A Certified Public Accountant with more than 12 years' experience in keeping records and making tax returns for 60 theatres, tells the essentials.

BY HERBERT BAYLSON

A MOTION PICTURE THEATRE bookkeeping system should be designed to give the exhibitor the results of his weekly operation quickly with a minimum amount of clerical work. As a flexible, quick moving, cash business with a daily or at most weekly change of commodity being sold, it is more important to get quick pictures of the results rather than long range views and, therefore, the orthodox commercial systems are found wanting.

RECEIPTS

BOTH DAILY and WEEKLY receipts should be carefully kept. The front of the weekly page (Fig. 1) should have a line for each day whereon can be recorded the opening and closing numbers of the daily tickets according to admission prices. By subtracting the opening number from the closing number of each admission scale, the exhibitor can easily calculate the admission income for that day—and enter the total amount in the column marked cash. A separate column should be provided for any city, state or federal admission tax to be collected so that these amounts are not co-mingled with the regular receipts, but are kept separate and apart. Provision should also be made for a separation of the receipts as to matinee and evening if so desired. All receipts should be deposited intact daily in the bank.

premiums, cooperative advertising, etc. should be entered in the column together with their cost.

The feature pictures shown at the opposition houses may be recorded so that the exhibitor will have an opportunity at the end of the week to review his weekly admission income and analyze the good or bad "box office" pictures. The weather for each day should be recorded as the elements are also a force in determining the success or failure of a picture at the box office. On one, easily scanned sheet, therefore, the exhibitor can visually check daily and weekly all of his channels of income and the contributing causes that may have increased or lowered them.

EXPENSES

Opposite the receipts sheet, there should be provided an analysis (Fig. 2) of the various expense accounts. In order to facilitate the handling of these items, it is suggested that the weekly bills be separated into their proper expense classification (i.e., film, advertising, supplies, etc.) before the checks in payment thereof are drawn. All checks in payment of the weekly bills are to be entered separately showing the check number, to whom drawn, the expense item incurred and the amount thereof.

After the checks are entered and the amounts totalled, this total should be transferred to the space provided for on the bank

RECEIPTS WEEK OF 19 THEATRE Re: Weather—Write in Fair, Warm, Rain, Cold, Snow, etc.

	TICKET NUMBERS				CASH	TAX		
	TO	=	@	¢	MATINEE		FEATURE:	Cost
	TO	=	@	¢				
SUN.	TO	=	@	¢				
	TO	=	@	¢	EVENING		SPECIAL ATTRACTION:	Weather
	TO	=	@	¢			OPPOSITION:	
	TO	=	@	¢	TOTAL		OPPOSITION:	
	TO	=	@	¢	MATINEE		FEATURE:	Cost
	TO	=	@	¢				
MON.	TO	=	@	¢				
	TO	=	@	¢	EVENING		SPECIAL ATTRACTION:	Weather
	TO	=	@	¢			OPPOSITION:	
	TO	=	@	¢				
FRI.	TO	=	@	¢				
	TO	=	@	¢	EVENING		SPECIAL ATTRACTION:	Weather
	TO	=	@	¢			OPPOSITION:	
	TO	=	@	¢	TOTAL		OPPOSITION:	
	TO	=	@	¢	MATINEE		FEATURE:	Cost
	TO	=	@	¢				
SAT.	TO	=	@	¢				
	TO	=	@	¢	EVENING		SPECIAL ATTRACTION:	Weather
	TO	=	@	¢			OPPOSITION:	
	TO	=	@	¢	TOTAL		OPPOSITION:	

TOTAL RECEIPTS
CANDY MACHINES
CUPS
ADVERTISING
MISCELLANEOUS

TOTAL FILM COST—
SPECIAL ATTRACTION COST—
TOTAL

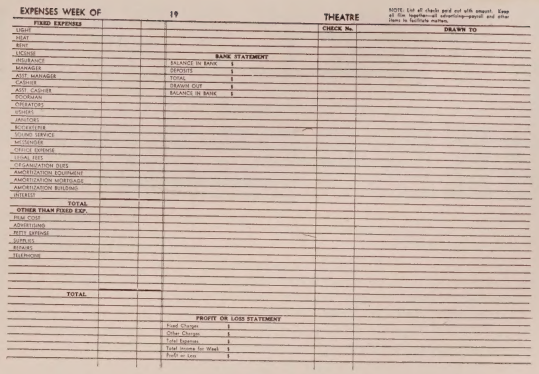
Total for Week $

FIG. 1

THE ORIGINAL SIMPLIFIED SYSTEM. Seven years ago Jay Emanuel Publications retained William A. Levick and Sons, a firm of certified public accountants with considerable theatre experience, to prepare the simplest possible method of bookkeeping that would enable the theatre owner or manager to know his financial condition at all times. Tax returns had made such records particularly necessary. While imitated and adopted by others in recent years, this Levick system remains today both the cheapest and most efficient available. Experience has proven that it requires only five minutes once each day and approximately 15 minutes once each week to maintain an accurate, weekly profit and loss statement. Above is illustrated, the method of keeping daily and weekly receipts together with all conditions which would affect the particular gross.

At the end of each week, the daily receipts are totalled and the amount entered at the bottom of the page under the item "Total Receipts"—Income from other sources such as candy machines, cups, advertising, etc. should be entered in the spaces provided therefor, and by adding these items to the admission receipts for the week—the total income for the week is computed. The same page should provide for the recording of the feature picture played on each day of the week—the cost thereof either flat rental or percentage. Any special attraction such as vaudeville,

statement and entered beside the item marked "Drawn Out." The total income as reported on the facing sheet is added to the previous weeks' balance and then the total of the checks drawn is deducted thus giving the balance in bank at the end of the week. The total of the weekly checks is now subdivided into the fixed expense classifications (i.e., light, heat, rent, insurance, salaries, amortization, etc.) and the other-than-fixed expenses (i.e., film cost, advertising, petty cash, repairs, etc.) Each expense item should be entered on the space provided therefor.



EXPENSES WEEK OF 19 THEATRE

NOTE: List all checks paid out with amount. Keep all slips together—all advertising—payroll and other items to facilitate entries.

FIXED EXPENSES	CHECK No.	DRAWN TO
LIGHT		
HEAT		
RENT		
LICENSE		
INSURANCE		
MANAGER		
ASST. MANAGER		
CASHIER		
ASST. CASHIER		
DOORMAN		
OPERATORS		
USHERS		
JANITORS		
BOOKKEEPER		
SOUND SERVICE		
MATCHMEN		
CAPITAL EXPENSE		
LEGAL FEES		
ORGANIZATION DUES		
AMORTIZATION EQUIPMENT		
AMORTIZATION MORTGAGE		
AMORTIZATION BUILDING		
INTEREST		
TOTAL		
OTHER THAN FIXED EXP.		
FILM COST		
ADVERTISING		
PETTY EXPENSE		
SUPPLIES		
REPAIRS		
TELEPHONE		
TOTAL		

BANK STATEMENT

BALANCE IN BANK	$
DEPOSITS	$
TOTAL	$
DRAWN OUT	$
BALANCE IN BANK	$

PROFIT OR LOSS STATEMENT

Fixed Charges	$
Other Charges	$
Total Expenses	$
Total Income for Week	$
Profit or Loss	$

FIG. 2

EXPENDITURES for all fixed charges can be averaged on a weekly basis. Other than fixed expenditures are, of course, the actual disbursements whether in cash or check that took place during the particular week. The bank statement can be kept on a monthly basis in accordance with the procedure of most banks or can be kept on a weekly basis and verified once each month when the cancelled checks are returned from the bank. The very simplicity of this system permits its periodic audit by a competent auditor. The latter procedure is heartily recommended in order to insure accuracy in making tax statments and filling out tax forms. For the percentages that can be charged off in the amortization of equipment and theatre structure, look elsewhere in this edition.

A petty cash fund of $25 or $50 is used for expenses that are to be paid immediately. A voucher is made out for each expenditure, signed by the person receiving the money and accompanied by a receipted bill. At the end of each week a check is drawn for the actual amount expended and thus the fund is maintained at the regular amount of $25 or $50. The amount of the check is entered in the expense column along side of petty cash expenses.

In the event that certain expenses are paid monthly in advance, the amount should be divided by four, and one-fourth of the monthly amount is to be entered in each of the four weeks during the month, so that each week will be charged with the proper share of the monthly expense.

Other items such as equipment and theatre building are computed on a yearly basis. The equipment of a motion picture exhibitor is generally considered, for income tax purposes, as having a 10 year life and 10 per cent of the cost would be allowed as a proper deduction for the year. This amount is divided by 52, which gives the proper charge for each week

Depreciation of building varies with the type of building, nature of construction and other factors. The rate varies from two and one-half per cent to five per cent per annum. In each instance the exhibitor will use the percentage applicable to his theatre and divide the yearly charge by 52, giving him the proper charge for each week.

The totals of the fixed charges and other than fixed charges are transferred to the profit and loss statement and the total income is transferred from the facing page. If the income is larger than the expenses, the result is a profit for the week but if the expenses are larger than the income, the result is a loss for the week.

Every exhibitor should analyze his daily receipts and endeaver to boost his admissions. The weekly sheet will aid him to keep the price paid for film in proper proportion of the receipts on that particular engagement. A review of the expenses listed will reveal if any of the charges are in excess of the normal amount.

CONTRACT RECORD

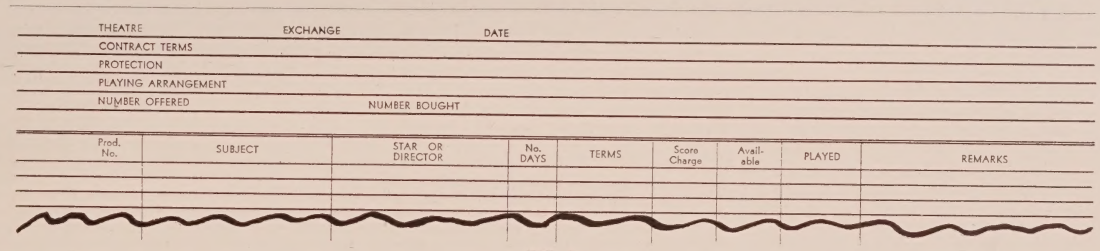
THE contract record (Fig. 3) is a very simple form and one sheet is used for each film exchange showing the date of contract, the term, protection playing arrangement and the number of pictures bought.

The production numbers are listed immediately upon the signing of the contract, the subject or title filled in whenever the information is furnished. The terms are to be entered listing the percentage price of a picture or the flat price, the score charge and the date of availability as notice is received from the exchanges. The actual play dates should be entered when the picture has been definitely booked. In this manner, the exhibitor will have a record of his contract with each exchange, showing the number of pictures contracted, the numbers, price, date of availability and date played.

A more elaborate contract record is provided by the use of a folder for each exchange as explained herewith. This folder is very similar to the cut off system in use by the exchange bookers.

The folder provides for the run of the theatre, number of days clearance and other miscellaneous information.

When the contract is signed, all the feature pictures are listed on the card showing the production number, title, tentative play date, rental price, or percentage terms. As the pictures become available, they are listed on the left part of the card in the order that the exchanges notify the theatre and then the play date is entered when the picture is booked to the theatre. After the picture has played the theatre the gross income is entered in the column provided and a check placed in the day or days that the picture actually played. Short subjects, serials, and news reel service are handled in a like manner as indicated by the various columns under each group.



THEATRE EXCHANGE DATE

CONTRACT TERMS

PROTECTION

PLAYING ARRANGEMENT

NUMBER OFFERED NUMBER BOUGHT

Prod. No.	SUBJECT	STAR OR DIRECTOR	No. DAYS	TERMS	Score Charge	Available	PLAYED	REMARKS

FIG. 3

BLOCKS OF FIVE SELLING makes more necessary than ever the keeping of some contract record form. When kept up to date it provides quick reference to the strength or weakness of a particular group of pictures, to the contractural obligations of the exhibitor, and to the contractural obligations of the distributor.

SUMMARY

FROM actual experience, it takes but 10 minutes' work each day and 60 minutes' work at the end of each week to maintain the records outlined above. Simplicity and a minimum of time consumed are the cardinal features of the system.

Herbert Baylson is a graduate of West Philadelphia High School and Wharton School of the University of Pennsylvania with degree of Bachelor of Science in Economics. He has been associated with the firm of William A. Levick and Company, Certified Public Accountants for over 15 years. He has been a Certified Public Accountant for over 12 years and is a member of the Pennsylvania Institute of Certified Public Accountants and National Association of Cost Accountants. He has supervised the installation and operation of many systems of accounting and more particularly in the motion picture industry. At present he is auditor of approximately 60 metropolitan eastern theatres and also of the Variety Club of Philadelphia.

A *Simplified* BOOKKEEPING SYSTEM and TAX RECORD compiled for EXHIBITORS .. FREE!

EXPENSES WEEK OF ____ 19 ____ **THEATRE** ____

NOTE: List all checks paid out with amount. Keep all film together—all advertising—payroll and other items to facilitate matters.

FIXED EXPENSES	CHECK No.	DRAWN TO
LIGHT		
HEAT		
RENT		
LICENSE		
INSURANCE		
MANAGER		
ASST. MANAGER		
CASHIER		
ASST. CASHIER		
DOORMAN		
OPERATORS		
USHERS		
JANITORS		
BOOKKEEPER		
SOUND SERVICE		
MESSENGER		
OFFICE EXPENSE		
LEGAL FEES		
ORGANIZATION DUES		
AMORTIZATION EQUIPMENT		
AMORTIZATION MORTGAGE		
AMORTIZATION BUILDING		
INTEREST		
TOTAL		
OTHER THAN FIXED EXP.		
FILM COST		
ADVERTISING		
PETTY EXPENSE		
SUPPLIES		
REPAIRS		
TELEPHONE		
TOTAL		

BANK STATEMENT

BALANCE IN BANK	$
DEPOSITS	$
TOTAL	$
DRAWN OUT	$
BALANCE IN BANK	$

PROFIT OR LOSS STATEMENT

Fixed Charges	$
Other Charges	$
Total Expenses	$
Total Income for Week	$
Profit or Loss	$

RECEIPTS WEEK OF ____ 19 ____ **THEATRE** ____

Re: Weather - Write in Fair, Warm, Rain, Cold, Snow, etc.

	TICKET NUMBERS					CASH	TAX		
	TO	=	@	¢	MATINEE			FEATURE:	Cost
	TO	=	@	¢					
SUN.	TO	=	@	¢					
	TO	=	@	¢	EVENING			SPECIAL ATTRACTION:	Weather
	TO	=	@	¢				OPPOSITION:	
	TO	=	@	¢	TOTAL			OPPOSITION:	
	TO	=	@	¢	MATINEE			FEATURE:	Cost
	TO	=	@	¢					
MON.	TO	=	@	¢					
	TO	=	@	¢	EVENING			SPECIAL ATTRACTION:	Weather
	TO	=	@	¢				OPPOSITION:	
	TO	=	@	¢	TOTAL			OPPOSITION:	
	TO	=	@	¢	MATINEE			FEATURE:	Cost
	TO	=	@	¢					
TUES.	TO	=	@	¢					
	TO	=	@	¢	EVENING			SPECIAL ATTRACTION:	Weather
	TO	=	@	¢				OPPOSITION:	
	TO	=	@	¢	TOTAL			OPPOSITION:	
	TO	=	@	¢	MATINEE			FEATURE:	Cost
	TO	=	@	¢					
WED.	TO	=	@	¢					
	TO	=	@	¢	EVENING			SPECIAL ATTRACTION:	Weather
	TO	=	@	¢				OPPOSITION:	
	TO	=	@	¢	TOTAL			OPPOSITION:	
	TO	=	@	¢	MATINEE			FEATURE:	Cost
	TO	=	@	¢					
THURS.	TO	=	@	¢					
	TO	=	@	¢	EVENING			SPECIAL ATTRACTION:	Weather
	TO	=	@	¢				OPPOSITION:	
	TO	=	@	¢	TOTAL			OPPOSITION:	
	TO	=	@	¢	MATINEE			FEATURE:	Cost
	TO	=	@	¢					
FRI.	TO	=	@	¢					
	TO	=	@	¢	EVENING			SPECIAL ATTRACTION:	Weather
	TO	=	@	¢				OPPOSITION:	
	TO	=	@	¢	TOTAL			OPPOSITION:	
	TO	=	@	¢	MATINEE			FEATURE:	Cost
	TO	=	@	¢					
SAT.	TO	=	@	¢					
	TO	=	@	¢	EVENING			SPECIAL ATTRACTION:	Weather
	TO	=	@	¢				OPPOSITION:	
	TO	=	@	¢	TOTAL			OPPOSITION:	

TOTAL RECEIPTS
CANDY MACHINES
CUPS
ADVERTISING
MISCELLANEOUS

Total for Week $

TOTAL FILM COST—
SPECIAL ATTRACTION COST—
TOTAL

JAY EMANUEL PUBLICATIONS, INC.

JAY EMANUEL PUBLICATIONS, INC.

(Actual sample pages — ½ Size — showing the manner in which a few minutes work each day can keep always available, a WEEKLY Profit and Loss Total)

THE *ORIGINAL* SYSTEM THAT HAS *OFTEN BEEN COPIED ..BUT NEVER EQUALLED!*

SPECIALLY PREPARED
for this publication in 1934 by the certified Public Accounting firm of . . .

WM. A. LEVICK & CO.
Accountants for over 200 Theatres!

DESCRIPTION and CONTENTS of the Full System furnished our Subscribers:

(A)—Size of book and of above pages 9 inches by 12 inches, pen ruled in red and blue ink and printed in black ink on heavy ledger paper. Covers are sturdy, but flexible and ring binding enables pages to lay flat for easy writing and cross checking. **(B)**—Weekly pages include: (1) amortization of fixed over-head, (2) weekly profit and loss statements, (3) daily ticket record, (4) weekly operating facts, (5) record of weather, opposition, and daily gross, (6) daily tax record. **(C)**—Contract record pages on special colored stock to avoid confusion and itemized. (1) name of exchange, (2) contract terms, (3) protection, (4) playing arrangements, (5) number offered and number bought, (6) production numbers, stars, number of days, availability, play date, and profit or loss. **(D)**—Social security cards in loose-leaf form providing a separate card for each employee, together with all details required for each individual tax account. **(E)**—A separate perpetual clearance calendar printed on stiff card for office wall or under desk glass. This is the original service created by this organization years ago, and now in use by most exchanges of the national distributors of the country. It was more recently copied exactly without improvement. **(F)**—The most complete system ever devised and only made possible by the organization that has practical daily theatre operating experience.

Here's how to get it . . .

Just become a Subscriber to THE EXHIBITOR . . . and in addition to receiving the next 52 issues of this famous trade journal, with its weekly *SERVISECTION*, its *TIP-OFF* on current grosses, its *RELEASE CHART*, its monthly *BETTER MANAGEMENT DEPARTMENT* on construction and maintenance, its *EXCEPTIONAL PICTURE COVERAGE* . . . and —

CLIP AND MAIL THIS COUPON

THE EXHIBITOR
1225 Vine Street, Philadelphia, Pa.

Gentlemen:

I want to take advantage of your offer to send me a complete system for keeping my theatre income, expenses, taxes, records, etc.

Enclosed find $2.00 for a One Year Subscription to **THE EXHIBITOR**, which I understand entitles me to this system—**FREE!**

NAME _____

THEATRE _____

ADDRESS _____

AIR CONDIT.

Practical Observations on Maintenance

The maintenance executive and purchasing agent for the Morse & Rothenberg Circuit discusses the card index system and supervision which they use.

BY REGINALD MORSE

I MIGHT typify our circuit, to begin with, as suburban, middle-class, and unosentatious. We operate some 16 houses, from a 650-seater (Roxbury, Roxbury, Massachusetts) to one seating almost 1,500 (Strand, Haverhill, Massachusetts). We have several houses in New York State, located in thickly-populated districts; but for the most part we're a typical suburban circuit.

In the maintenance of these houses I want to bear in mind economy as well as efficiency. Also, I like to bear in mind other things besides the mere buying and inspecting of equipment. I have no formal manner of working toward these ends, save that I inspect each house every two or three weeks, and keep in close contact with our managers.

This about sums up what we are and how I go about "maintaining" us. To give a picture now of what goes into the houses I might say a few words on buying and economy in buying.

SEATS—Seats, for example, in town, class houses, I suppose, go in for the upholstered kind. In our houses we like a good sturdy, durable seat which, at the same time, looks up-to-date. While most of the seats used in our theatres are completely upholstered, I have found the best for the poorer locales, where especially tough wear is necessary, to be a good spring, all-leather seat, with a veneer back. After re-seating a house, we keep our seats in good condition by a servicer, with whom we contract, who specializes in re-covering seats, stapling down the springs, and sometimes converting squab-excelsior seats to stuffed-spring seats. We save a lot of money this way because our seats give us long service; and most of our houses now have been completely seated with the sturdy veneer-back springs.

JACK—I'm not talking about money, but about Jack-of-all-trades, who's a requisite of every one of our houses. No theatre man should overlook this gem, whose light is hidden beneath the bushel of his everyday tasks. He's the fellow who will cut out an easel or paint a sign, or lay out an ad, or make a shadow-box; he will hang up mirrors behind a premium display or liven up your rest-rooms with some decoration of his invention. This is the utility man. He may be the janitor or assistant-manager. Up in the Colonial, Nashua, New Hampshire, he's Ray Gilbert, who assists Ben Gold. In the Strand, Haverhill, he's Harold Fordham, who assists Morris Sidman. At the State, Quincy, he's Vaughn Yerxa, who assists Leonard Goldberg.

I don't believe in overlooking these fellows, because we've had great success with them. Our managers, for the most part, are left to their own resources in selecting personnel, and in almost every one of our theatres you'll find one of these versatile men. One way, and an excellent one, to economize in your local house is to find one of these especially talented men who, by their own initiative, can putter up fittings and decorations that you'd otherwise have to buy from specialty houses.

MAKING THE ROUNDS—As I said before, every two or three weeks I come around to the local house. I know well, from my equipment records, how each house is supplied, and after my visit, I know what changes are necessary. There's no special procedure about these visits except that I'm usually found outside before the first show of the day, chinning with the manager, while inspecting the general facade of the theatre, condition of the advertising displays, marquee, noting and incorporating in my report the appearance and bearing of the cashier, as well as the booth in which she sits.

Then I'll wander into the lobby, look at the doorman as well as the sand-urns and finally get right down into the house, where, if you really want to notice these things, there are a thousand details, none of which is too small for attention.

PESTS—In an article appearing in THE EXHIBITOR by a Pennsylvania exhibitor, I noticed a mention of vadalism. Well, whether it's Pennsylvania or Poker Flats, there's plenty of that. They'll put gum everywhere—seats, carpets, mirrors. There are habitual carvers and gnawers. Some don't do it maliciously, but they'll watch some exciting western and rip half the leather of a seat. Hence, when I inspect I'll look at the seats from every aisle and then the carpets and usually get a requisition from the manager for more gum remover, carbon tetrachloride. Then I'll notice the conditions of the rest-rooms and, pardon the indelicacy, whether any rest-room artists have been at work with their knives or pencils, the which is to obliterated by soap or paint.

CONTINUING THE TOUR—To get back to our rounds. When the show starts, I'll stand in back, watch it, checking the clarity of the screen, brilliance of light, how smooth or unsmooth are the change-overs, and whether the trailer is too short, too long, or too boring, while I check all the while the condition of ventilation. Most of our houses use blower and exhaust systems which change the air every three minutes and work quite efficiently. I'll mosey up to the projection booth to talk with the operators and see if the machines are in good repair (sprockets, tension springs, and the like); and, if they are not, they'll be sent into the supply house for overhauling while a loan mechanism is used.

Somewhere in my rounds I'll turn on all the house lights and look at the walls, floors and corners. Every two or three months our managers have their walls painted or swabbed down, with, of course, a real house-cleaning in spring and fall, and dusting with a wool wall brush, provided with an extension handle.

CARPETS—When a carpet's worn, you just have to get a new one, but there are traffic spots, such as at the head of aisles and at doors, where they will wear more than elsewhere, and local carpet-houses or department stores give good service to bind the edges and sew the seams. We buy extra mats with our carpets, for replacements.

MISCELLANEOUS SUPPLIES—Every maintenance man is besieged for everything under the sun by every dealer under the sun and, while there is economizing to be done all the time, if I had my way I'd buy from several competitors at once. Our circuit does not contract with one house for everything, and samples are always being sent up for waxes, soaps, towels, uniforms and what-have-you. In the case of uniforms, each manufacturer sends a sample and for our house it's not the deluxe but the well-wearing, neat-appearing uniform that's ordered. Each local manager requisitions his own cleaning supplies and I have the janitor supply company send out the order. Naturally, by checking with the manager I can judge what satisfaction any products have given.

BACK TO THE OFFICE—Well, that's about the story and when I return to the home office in Boston, managers' requisitions and my own suggestions are discussed with Charles Morse and Louis S. Rothenberg. We fit out the houses, I think, with efficiency and dispatch, and then watch the box office.

In the 18 years that Reginald Morse has been in the business he has worked at all jobs from usher to manager. He says that he's swept floors, ousted drunken patrons, and done everything except play a piano, which he admits, he couldn't have done if he wanted to. Eighteen years ago, just in case, he got himself a special operator's license, too. For a number of years, he managed the Roxbury, Roxbury, Mass., when he became part-owner, and has, for the past several years, been in charge of maintenance for the Morse-Rothenberg circuit. "Reggie," who is 43, but looking much younger, is tall, lean, and quiet. He's married, has a boy and a girl, is a jack-of-all-trades, puttering around his Newton, Mass., home. Recently, he took up photography, but likes golf best.

MANAGER

PROJECTIONIST

PROJECTIONIST

CALLS DATE	BY	DATE	CARBONS	REPAIRS & PARTS	SUPPLIES & MISC.	EQUIPMENT	DATE	CARBONS	REPAIRS & PARTS	SUPPLIES & MISC.	EQUIPMENT
							TOTALS FWD.				

REMARKS (continued)

EQUIPMENT RECORDS

CARBONS	TYPE	NEGATIVE	POSITIVE	SPOT NEG.	SPOT POSITIVE	
PROJECTORS	MFR.	MODEL	REAR SHUTTER	MAGAZINES	PEDESTALS	CHANGE OVERS
CURRENT DEVICES		TYPE / PHASE / CYCLES	AC VOLTS	DC VOLTS	AMPERES	
		TYPE / PHASE / CYCLES	AC VOLTS	DC VOLTS	AMPERES	
LENSES		SERIES	FOCUS	THROW	REMARKS:—	
SOUND SYSTEM		PHOTO-CELL	EXCITER LAMP	CUBICAL CONTENT: WIDTH	LENGTH	HEIGHT
SCREENS		PICTURE WIDTH	PICTURE HEIGHT	OVERALL WIDTH	OVERALL HEIGHT	CONDITION
CHAIRS		AUD. CAPACITY	TYPE BACK	TYPE SEAT	CONDITION	AGE
		BAL. CAPACITY	TYPE BACK	TYPE SEAT	CONDITION	AGE
BLOWERS		YES OR NO	QUANTITY	SATISFACTORY REMARKS:—		
TRANSPORTATION COMPANY		PARCEL POST ZONE	NO.	OTHER REMARKS:—		

ACTUAL CARD INDEX SYSTEMS used by the Morse-Rothenberg Circuit to keep careful check on the condition of their theatres and equipment. Such a system and the history which it records of any one name product is most servicable in making future purchases. On this and the reverse side are the items which Mr. Morse checks on his inspection tours. A master file in the home office reflects all facts, costs, maintenance expense and contrast figures in a more detailed manner.

THEATRE | TOWN or CITY

OWNER | MANAGER

BOOTH	MAKE	HIGH	LONG	DEEP	FAN	TABLE	REWIND	LIGHTS
MACHINES	MAKE	NUMBERS		MOTOR	LENSES	LAMP—HOUSE		INSTALLED
GENERATOR	MAKE	SERIAL NO.	VOLT	AMPERES	MOTOR NO.	VOLT	CYCLE	PHASE
EMERGENCY LINE	MAKE	NUMBER	VOLT	CYCLE				
STEREOPTICON	MAKE	LENSES	RHEO	SHUTTER				
CURTAIN	MAKE	SIZE	FRAME	ROLLER	INSTALLED	CONDITION		
SPOT	MAKE	COLOR WH	LENS	RHEO	FRAMES	INSTALLED	CONDITION	
CARBONS	PROJ. - NEG.	PROJ. POS.	SPOT - NEG.	SPOT - POS.	STEREO NEG	STERIO POS.	MAKE USED	PREFERRED
MACHINES to CURTAIN	DISTANCE	ANGLE	PICTURE	**Rheostats on Projectors** MAKE		VOLTS	AMPERES	
THEATRE	SEATS	BALCONY	ORCHESTRA	WIDTH	LENGTH	**STAGE**	DEEP	LONG

REMARKS | DATE

ALTEC SERVICE CORPORATION

Its Functions and Its Usefulness to the Motion Picture Theatres of the U. S.

Altec Service Corporation is an organization composed of engineers, trained both in electrical and mechanical engineering practice, with particular emphasis on all mechanisms involving the principles and techniques of the vacuum tube. This organization is nationwide in scope, and serves motion picture theatres in all parts of the country, both in urban and rural areas. Altec services more motion picture theatres in the United States than any other service organization.

ALTEC CONTRACTS

Motion picture theatres receive the services of Altec under several forms of contract. One form comprises regular inspection of sound equipment. A second form calls upon Altec to provide parts for repairs and replacements to sound equipment, for a flat weekly charge. A third form calls upon Altec to provide parts for repairs and replacements to the motion picture equipment as well as the sound system, for a flat weekly charge.

STOCK POINTS

Stock points are located at strategic points throughout the country. Because Altec maintains the largest number of such stock points, containing the largest inventory of spare parts of any comparable organization, Altec is able to provide exhibitors with the most rapid restoration of normal theatre operation when an emergency occurs.

TESTING OF PARTS

Altec maintains an engineering staff in a continuously functioning technical laboratory. This staff makes a continuous study of projection and sound parts, in order to furnish Altec's customers with parts of tested reliability and low cost.

NEW METHODS STUDIED

This engineering staff also makes a continuous study of field service problems, and devises progressively improved operating standards. New techniques and methods, as soon as they are perfected, are relayed to every member of the Altec field force, and are applied at once in Altec-serviced theatres.

ADVISORY BOARD

The engineering policies of Altec are directed by a technical advisory board whose work is coordinated with the research activities of Electrical Research Products, Inc., the Bell Telephone Laboratories, the Research Council of the Academy of Motion Picture Arts and Sciences, and with the Society of Motion Picture Engineers. The advice of this advisory board is frequently sought by technical directors of major producing companies and by leading manufacturers of sound and projection equipment.

FIELD ORGANIZATION

The Altec field force, the largest of any organization in the field, places an Altec service inspector within easy reach of all motion picture theatres, no matter where located. Activities of Altec Service Corporation are directed from nine district offices, located in New York, Philadelphia, Boston, Atlanta, Chicago, Cincinnati, Detroit, Kansas City, and Los Angeles, as well as from branch offices located in Newark, N. J., Scranton, Pa., Baltimore, New Orleans, Dallas, Cleveland, Pittsburgh, Minneapolis, Denver, San Francisco, Seattle, and Portland, Ore.

Inquiries addressed to the home office, 250 West 57th Street, New York, or to the nearest district office will bring full details about Altec service without obligation to exhibitors.

ALTEC
SERVICE CORPORATION

250 West 57th Street • New York City

CHANGE TO ALTEC SERVICE . . . A CHANGE FOR THE BETTER

ALTEC SERVICE CORP.

AIR CONDIT.

Ad and Trailer Selling of the Show

The advertising executive of a film distributor delves into the memories of his theatre management days and brings forth some nifties.

BY LOUIS POLLOCK, UNIVERSAL PICTURES, NEW YORK

THERE once was a theatre manager who was going half-crazy trying to write trailer and ad copy for a horror picture. The difficulty was that this was his fourth horror picture in a row; a little booking snarl, don't you see? So there we find him trying to write a couple of words of selling copy that would make the fourth horror picture sound a little different than the first three; trying to write something special. This was going to be a very special show; especially awful, if he couldn't think of anything good; and especially fine, if he could.

And he kept cooking up more and more copy but it all sounded like stuff he had heard before many times. And if it sounded like that to him he knew it would sound the same to the ticket-buyers he was trying to snare.

"WE DARE YOU TO SEE THIS PICTURE!" The trouble with this line was that he had already double-dared them to see the second picture and triple-dared them to see the third picture. Something told him that this time the challenge would go by uncontested.

"DON'T COME UNLESS YOU HAVE STRONG NERVES!" Somehow our friend didn't have the nerve to use this one. It used to kill 'em but now it didn't sound a bit lethal. A dozen other similar lines came to mind, but each of them, he realized, had more whiskers than guts, and the whiskers would be sure to trip up the attraction.

AND so our friend sweated on and on until suddenly a cog clicked somewhere in his mind. Here was a new idea! And when the time came for the fourth horror picture to be sold on the screen and in the ads, this is what met the public eye:

WHAT TO DO IN CASE OF HEART FAILURE!

1. Call a doctor.
2. Place patient in reclining position.
3. Apply stimulants.
4. Loosen clothing.
5. Untie shoes.
6. Give patient water.
7. AND REMEMBER THIS WHEN YOU GO TO SEE "THE MUMMY'S HAND" AT THE RIALTO THEATRE

Somehow, there is a little kick when you come to the last punch line of the above. This manager knew there was, because enough patrons stopped to talk to him about the ad to convince him that they appreciated it. In one way or another, the effort he had put into his thinking had transmitted itself into a selling force which brought them in.

The secret might lie in the fact that his ad had lured into reading it people who ordinarily would skip over the usual run of horror copy. But they didn't know *what* he was selling until their interest was trapped, and enough of these responded to get him a worthwhile additional audience in addition to the group the theatre would have gotten with the usual ad copy.

"DISTINGUISHED by some unusual quality" is what you will read when you look in the dictionary for the definition of the word *special*. There are other definitions, but this one will do as far as showmen are concerned; "distinguished by some unusual quality; uncommon; extraordinary."

Therein lies the tipoff to any special campaign so far as my observation is concerned. Whenever the approach of copy and the quality of copy can be described as uncommon or extraordinary, results are generally the kind that payoff. It isn't easy always to get such quality of appeal these days when almost every kind of angle sems to have been discovered and worked for all it is worth. But it is possible—and extremely profitable.

AS every showman knows, a special campaign that clicks can boost an ordinary show to the point where it grosses as much as a top presentation. And, as every showman knows, most campaigns of this kind do not click. Yet there have been and there are numerous instances when one theatre has done exceptional business by special treatment in contrast to quite ordinary business done by other theatres playing the same attraction and resorting to ordinary selling. If a show manager tries to use ingenuity, tries to *convince*—he *can* raise the percentage of his successes.

If one obeys the instinct that guides the real impressario, no matter what the nature of his presentation, it will always lead him to the secret of successful campaign work—individuality of advertising. It should be manifest that the public is constantly assailed with selling literature in all its forms, and, in time, becomes wary of such appeals when they are instantly evident. But when you change the form so as to impart some of your message in an interesting or novel manner before he even knows he's being sold anything you've registered and you've made a sale in many instances.

IF you take any successful theatrical literature and squeeze out its essence, you will always discover it to be the quality of unusualness. Its importance will be impressed on any investigator who cares to do a little research work on show-selling. You have to lure, you have to color what you are offering with the deepest dyes of attractiveness, and you do that best when you convince the public by the use of *special* appeal preferably delivered in a *special* manner. Some people call it working in harmony with the laws of psychology; others are satisfied to define it as using properly the magic power that any show can exert on the public if correctly presented.

I recall an interesting example of this in a case where one of three neighborhood theatres—all of which played the same show day and date—had an anniversary week, and we, who operated this theatre, tried to run up extra grosses on the basis of the celebration only; there was no difference in shows. Since the comparative grosses of the three houses averaged about the same week to week, we knew our efforts could be gauged pretty accurately by the home office of the theatre chain which operated all three houses.

After hours of discussion trying to dig up an idea which actually was different and gave evidence of getting results, we finally hit on something. It happened that this theatre was in a section of town bordering on a park district whose commissioners were trying to put over a three million dollar bond issue at a forthcoming election. We sold these commissioners the idea of displaying a relief map in our lobby illustrating the improvements they would make with the three million they wanted. In return, the week before the anniversary, the commissioners sent over about six truckloads of flowers. The blooms overflowed the lobby, bedecked every inch of public space in the house down to the washrooms.

Remember, this display was in the theatre the week *before* the anniversary, the week in which we ran our trailers on it. Such a lavish display tended to convince our patrons that something important was afoot; that we really regarded the event as something special. It was a clincher, in other words, and when receipts were counted up at the close of the following week, our house was nearly 25 per cent ahead of its quota or normal business as determined by its week to week business comparison with its two sister theatres.

A FELLOW can't always get a world-beater of an idea yet, by persistence with your thinking, it is possible to get away from the usual and hackneyed—and that in itself is a worthwhile thing. After deciding on what the thought of your message will be, it works wonders to keep revolving it around in your mind until you can state it in the least number of words. This is especially valuable when you come to write your trailer on it. The fewer the words on the screen, the more emphasis for each of them and the more effective the complete message. The

(Continued on Page 297)

KLIEGL BROS

UNIVERSAL ELECTRIC STAGE LIGHTING CO., INC.

321 West 50th Street, New York, N.Y.

Telephone: Columbus 5-0130

Lighting for Theatre, Stage, and Auditorium

Effective illumination—adequate and suitable for practical requirements is the result of a well planned layout combined with a sound knowledge of the technicalities of lighting equipment and lighting applications. The information contained herein will be helpful to architects, designers, and others concerned with lighting as a functional or structural element.

The different and innumerable forms of lighting devices now available necessitates careful selection to avoid the handicaps of outmoded, inefficient or improper equipment.

On the following pages is a listing of selected Kliegl standard items of modern design applicable for stage, auditorium, and general illumination. For special needs we manufacture lighting equipment to suit requirements.

You may specify or order Kliegl Bros. products with confidence in their efficiency of design, sturdy construction, and satisfactory performance. They embody the accumulated knowledge and experience of nearly half a century as leaders in the field of specialty lighting.

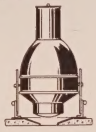
FRONT LIGHTING

One of the essential provisions is direct lighting of the stage from the front—to insure adequate illumination, eliminate facial shadows, and floodlight entire stage opening, stage apron, or orchestra; also applied in some instances for variable color lighting of front drops or curtains. Klieglight type units shown are most satisfactory for this purpose; accommodate incandescent lamps, permitting use of dimmers and remote control; and are equipped with framing shutters, thus light beam may be restricted to desired areas. Selection depends on conditional requirements as to range, intensity, color control, etc. Units are usually concealed somewhere in building structure, as indicated, with light beam directed toward the stage, and provisions made for access to unit for relamping.

OVER CEILING UNITS

For front lighting from above ceiling. Furnished with drop in shutters; also flush-ceiling plaster cone and mounting plate for light outlet and support of unit. Average working range: 500 watt up to 20 ft.; 1000 watt up to 40 ft.; 2000 watt over 40 ft.

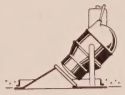
No. 2164



No. 2166

Down Projection—within a few degrees of vertical; normally used for floodlighting orchestra; placed overhead a few feet forward of pit.

No.	Watts	Lens	Price
2164	250/500	5" double	$36.00
2166	1000	6" double	60.00
2168	1000/2000	6" double	75.00

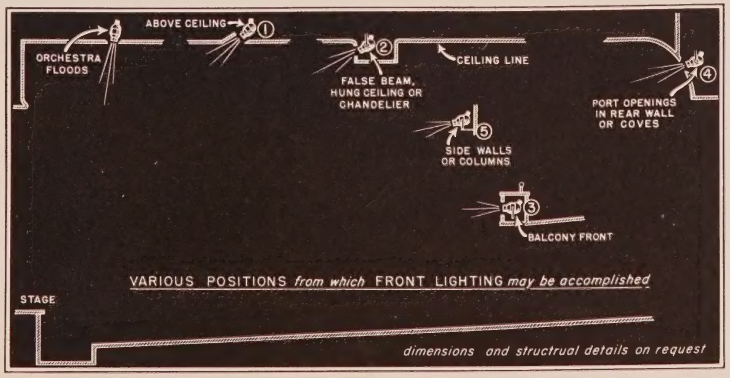


No. 2165

No. 2167

Angular Projection—approximately 45° from horizontal; for front lighting stage; generally placed 20 ft. or more forward in auditorium ceiling.

No.	Watts	Lens	Price
2165	250/500	5" double	$42.00
2167	1000	6" double	66.00
2169	1000/2000	6" double	80.00



GENERAL SERVICE UNITS

For front lighting from balcony rail, side or rear wall, hung ceiling, and other locations; are supplied with round base, pipe clamp, or wall bracket for mounting. Average working range: 500 watt up to 50 ft.; 1000 watt up to 75 ft.; 2000 watt over 75 ft.

No. 1163-B

No. 1164-B

Drop-in Shutter Arrangement

No.	Watts	Lens	Price
1163-B	250/500	5" single	$28.00
1164-B	1000	6" single	55.00
1167-B	1000/2000	6" single	69.00

No. 1165-B

No. 1366-B

Built-in Shutter Arrangement

No.	Watts	Lens	Price
1165-B	250/500	6" single	$48.00
1366-B	1000/2000	6" single	90.00
1368-B	1000/2000	8" single	98.00

Remote Control Color Frames

No 1165 BAC

Above built-in shutter units can be supplied, additionally equipped with four electro-mechanically operated color frames permitting color changes. Entire service of spotlights, including white and color lighting, may be controlled from a distant point; and may be arranged to operate collectively or individually from a selective control board.

For 115 volt A.C. remote control color frames, add to list prices as follows: No. 1165—**$112.00**; No. 1366—**$121.00**; No. 1368—**$125.00**. Also available with D.C. controls, prices on application.

For built-in iris shutters, for any of above units, add **$15.00**.

BOOTH SPOTLIGHTS

Used from projection booth for spotlighting performers and musicians, for floodlighting stage, and for various stage lighting effects.

ARC SPOTLIGHTS

Standard Types—for general applications; with hand feed arc lamp in suitable housing, focusing and directional controls, condensing lens, and slide grooves for color frames and attachments; adjustably mounted on telescopic pedestal floor stand, with arc ballast resistance, enclosed line switch and 25 ft. cable.

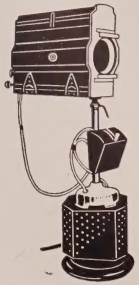
No. 10—50 amp., 125 volt, 6″ lens, 19″ hood. Normal working range up to 50 ft. ..... Price **$107.00**

No. 11—70 amp., 125 volt, 6″ lens, 21″ hood. Normal working range up to 75 ft. ..... Price **145.00**

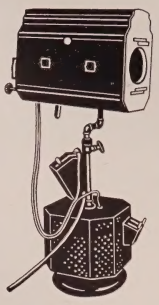
No. 18—70 amp., 125 volt, 8″ lens, 24″ hood. Normal working range up to 100 ft. ..... Price **170.00**

No. 12—100 amp., 125 volt, 8″ lens, 21″ hood. Normal working range up to 125 ft. ..... Price **286.00***

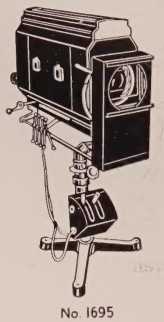
***No. 12** without rheostat or cable... Price **175.00**



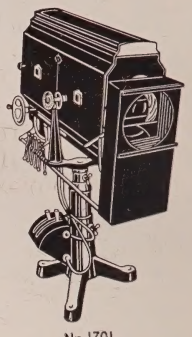
No. 10



No. 12



No. 1695



No. 1701

All-Duty Types—de luxe models for presentation houses; high-powered long range arc spotlights, fully equipped with boomerang for rapid color changes; built-in iris and curtain shutters for framing light beam; quick-acting focusing arrangements; double-wall housing with direct-draft ventilation; adjustably mounted on heavy cast-iron base.

Ballast resistances for all-duty arc spotlights are not included as standard equipment. When ordered, are supplied as separate units separately priced without cable for mounting at some out-of-the-way location.

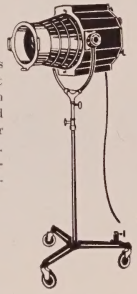
No. 1695—100 amp., 125 volt, 8″ lens, 30″ hood, 5 color frames, asbestos leads, line switch. Normal working range 100/150 ft. Price **$460.00**

No. 1701—140 amp., 125 volt, 10″ lens, 39″ hood, motor-driven arc control, 6 color frames, asbestos leads, booster switch. Normal working range 100/200 ft. Price **$675.00**

INC. SPOTS *(KLIEGLIGHTS)*

High-intensity beam projector for general service. Accommodates standard bipost base-up-burning T-bulb concentrated filament lamps. Embodies ellipsoidal reflector, lens system, and built-in iris and framing shutters which permit regulation of size and shape of beam. Controls conveniently located and arranged for quick and easy manipulation. Line switch on housing, 25 ft. cable, slide grooves on front for color frames. Mounted on telescopic floor stand with rubber-tired roller casters. Normal working range up to 100 ft.

No.	Watts	Lens	Hood	Price
1166CR	1000/2000	6″	32″	$150.00
1168CR	1000/2000	8″	32″	168.00



No 1168-CR

PLUG OUTLETS

Heavy-duty plug receptacles provide convenient outlets for spot lamps and other stage lighting apparatus—in projection booths, on balcony rail, proscenium wall, light bridge, stage floor, and other locations. Listed by Underwriters.

No 311

FLUSH WALL TYPES

No.	Outlets	Amps./Outlet	Price
310	1 2-wire	50	$10.00
311	2 2-wire	50	16.00
312	3 2-wire	50	24.00
313	4 2-wire	50	30.00

No 319

SURFACE WALL TYPES

307	1 2-wire	50	8.00
317	2 2-wire	50	14.00
318	3 2-wire	50	21.00
319	4 2-wire	50	28.00

No. 354

STAGE FLOOR TYPES

No.	Description	Price
351	1 2-wire 50 amp. outlet	$10.00
352	2 2-wire 1 25 amp. and 1 50 amp. outlets	18.00
353	3 2-wire 25 amp. outlets	27.00
354	4 2-wire 25 amp. outlets	36.00

BATTEN SPOTLIGHTS and FLOODLIGHTS

Overhead units suspended from pipe battens above the stage, for localized high lighting and effect lighting of acting areas.

No 43N6-E

No. 43N8-E

No. 43N12-E

SPOTLIGHTS

Following listed spotlights accommodate standard concentrated filament incandescent lamps. The Fresnel lens type units give a soft edge spot beam, of about two times greater intensity than conventional spotlights. Plano-convex lens units, being fitted with the usual condensing lens, give a defined spot of light. All are equipped with an adjustable lamp carriage for focusing; Alzak aluminum reflector; and slide grooves for color frames. Supplied with short asbestos leads, yoke, and 1¼″ pipe clamp for stage use.

Fresnel Lens Spots

No.	Watts	Lens	Price
43N6-E	500	6″	$17.00
43N8-E	1000	8″	45.00
43N12-E	2000	12″	75.00

Plano-Convex Lens Spots

53-E	250/400	4½″	13.60*
70-E	1000/1500	6″	33.00
71-E	1500/2000	6″	37.00

*Without reflector. Price **$12.00.**

FLOODLIGHTS

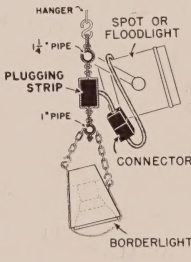
No. 540

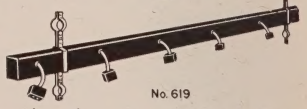
Designed for use with 500 watt PS 40 mogul screw base incandescent filament lamps. Wired with short length asbestos-covered leads. Provided with slide grooves on front for color frames with gelatine mediums.

No.	Description	Price
540	Open box reflector sprayed heat-proof white, with chain hangers	$11.50
546	Parabolic boxed Alzak aluminum reflector, with 1¼″ pipe clamp hangers	20.00

No. 546

PLUGGING STRIPS





No. 619

Provide safe and convenient facilities for connecting spot and floodlights to service supply, when units are hung from overhead pipe batten.

Consists of continuous metal wireway, extending across the stage, and clamped to pipe batten, with a number of 15 ampere pin-plug connectors distributed throughout its length, usually spaced 18″ apart with 18″ extension of flexible cable, and supporting brackets placed 3′ on centers. Furnished wired for any required number of circuits, complete with connectors, and batten clamps. Prices on request—specify length, number of connectors, circuits, etc.

KLIEGL BROS

BORDERLIGHTS

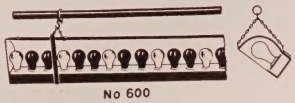
Hung from pipe battens, provide general illumination of stage from overhead, with unmodified and colored light. Usually are a few feet longer than proscenium opening, borders spaced six to eight feet apart, and tilted toward rear of stage.

Size of stage, character of productions, and height of border above stage, are governing factors in selection. Generally 100 watt borders are used when hung 10 to 15 feet above stage; 150 or 200 watt up to 20 feet; and the higher wattages when over 20 feet.

Kliegl borderlights are furnished complete, wired for three or more colors: white and/or amber, blue, red and/or green; lamps spaced as indicated, or wider; in one continuous length or in sections; with splice box for feeder connections, scenery guard, and chain hangers.

Work lights may be included, wired on separate circuit, reflecting light downward or upward as required.

Specify: type, length, wattage of lamps, number of colors, and location of splice box.

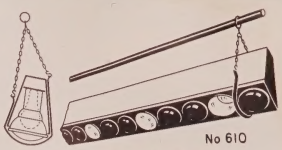


No 600

CONTINUOUS REFLECTOR TYPE

No. 600—Open trough design, for colored and inside frosted white lamps. Continuous reflector sprayed heat-proof white. 60/100 watt outlets, porcelain screw base receptacles spaced 4" on centers.

Price **$4.20** per foot



No 610

INDIVIDUAL REFLECTOR TYPE

For clear or inside frosted lamps. Individual Alzak-aluminum reflectors. Porcelain screw base receptacles spaced as indicated, heat-resisting-glass color roundels, hinged roundel holders.

No.	Watts	Outlets	Price
610	100	6" o.c.	**$12.00**/ft.
610-A	150	6" o.c.	**12.00**/ft.
602	200	8" o.c.	**12.00**/ft.
603	300/500	12" o.c.	**12.00**/ft.

CYCLORAMA BORDERS

Placed about four feet in front of back drop, are similar to regular borders, but used primarily for blue-lighting of cyclorama from above. For curved installations they are made in short, straight sections, about 5 feet in length. In some instances, floodlights (Nos. 540 or 546) hung from battens, are used in place of border strips.

FOOTLIGHTS

Located at front edge of stage, footlights are usually about 4 feet shorter than proscenium opening, direct light upward and toward rear of stage, provide general illumination for face and figure of performers, for depth lighting of sets, and color effects.

In theatres and wherever the stage is regularly used for musical or dramatic productions, permanent type footlights are preferred. In school auditoriums, recreational buildings, assembly halls, and the like, where footlights are only occasionally required, disappearing type footlights are recommended.

For the average stage, approximately 20 feet in depth, single row footlights with lamps up to 100 watts are suitable. For the larger stage and presentation houses, higher wattage or double-row foots are recommended.

Kliegl footlights are furnished complete, ready for installation, wired for three or more colors, with splice box for feeder connections.

Specify: type, length, wattage of lamps, number of colors, and location of splice box.

PERMANENT TYPES

Fixed in position, hood extends minimum above stage floor. Any length or curvature required. Wired, as specified, for three or more colors. Receptacles spaced as indicated, or wider.

		Watts	Outlets	Price*
No. 622	single row	60/100	4" o.c.	**$4.70**/ft.
No. 620-A	single row	100	6" o.c.	**12.00**/ft.
No. 621	double row	100	4½" o.c.	**30.00**/ft.

*For straight lengths; curved **$1.50** ft. additional.

DISAPPEARING TYPES

When not in use are closed down flush with stage floor. Furnished in standard 5-foot lengths. Completely assembled. Wired for 3 colors. Automatic cut-off mercury switches. Solid Kiln dried oak flooring. Malleable iron cross brackets. Positive latches. Terminal blocks for feeder connections.

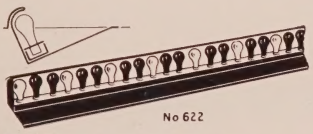
		Watts	Outlets	Price
No. 829	single row	60/100	15	**$50.00**
No. 830	single row	100	12	**85.00**
No. 831	double row	100	24	**111.00**
No. 832	single row	75/100	12	**65.00**
No. 833A	single row*	100	9	**85.00**
No. 833	single row*	150	9	**85.00**

*Framed-panel flooring; others listed have continuous flooring.

CYCLORAMA FOOTLIGHTS

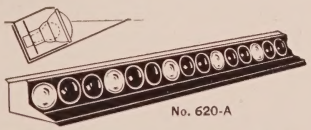
Strip reflectors, recessed in floor at foot of cyclorama, wired for amber, red, and blue colors for producing moonlight, sunrise, sunset, and similar horizon effect lighting. Usually specially made to suit structural conditions.

PERMANENT TYPES



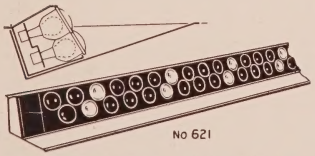
No 622

No. 622—Single row open trough design, with continuous reflector sprayed heat-proof white, for use with colored lamps.



No. 620-A

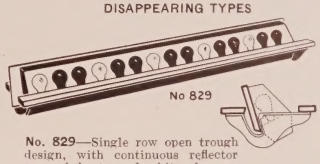
No. 620-A—Single row receptacles, with individual Alzak aluminum reflectors and glass color roundels, for use with clear or inside frosted lamps.



No 621

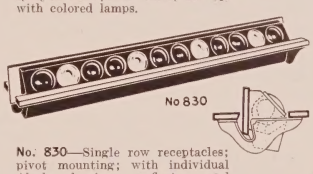
No. 621—Double row receptacles, with individual Alzak aluminum reflectors and glass color roundels, for use with clear or inside frosted lamps.

DISAPPEARING TYPES



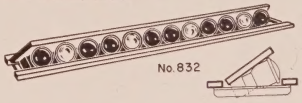
No 829

No. 829—Single row open trough design, with continuous reflector sprayed heat-proof white, for use with colored lamps.



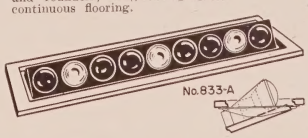
No 830

No. 830—Single row receptacles; pivot mounting; with individual Alzak aluminum reflectors and glass color roundels, for use with clear or inside frosted lamps. **No. 831** similar, double row.



No. 832

No. 832 — Single row reflectors and roundels; hinged mounting; continuous flooring.



No. 833-A

No. 833A—Single row reflectors and roundels; swivel mounting; framed-panel flooring. **No. 833** similar, for higher wattage.

PROSCENIUM LIGHTS

No. 597

STRIP REFLECTORS

Proscenium strip lights, similar to borderlights in general construction, are furnished wired for 3 or more colors, with splice box at one end for feeder connections, and with strap hinges for mounting, permitting variations in direction of light.

Following are furnished with individual Alzak aluminum reflectors, and clear or colored glass roundels. **No. 597** is additionally equipped with slide grooves for accommodating color frames with gelatine mediums. For proscenium openings approximately 25 ft. 40/60 watt strips are suitable; 35 ft. opening 100/150 watt strips are recommended; and the higher wattages for larger stage openings.

No.	Watts	Outlets	Price
599	40/60	4½" o.c.	**$16.50**/ft.
598	100/150	6" o.c.	**12.00**/ft.
597	200	8" o.c.	**13.50**/ft.

SPOT PROJECTORS

As tormentors, following Kliegl spotlights and projectors, provide the flexibility of light control required for spotlighting or floodlighting stage areas from side entrances.

Fresnel lens spots **No. 43N6** and **No. 43N8** or plano-convex lens spots **No. 53** and **No. 70**, as listed on page 2, under batten spotlights.

Junior Klieglights, **No. 1165-E**, 250/500 watt, with ellipsoidal reflector, 6" lens, built-in adjustable framing shutters, and slide grooves for color frames. Price **$48.00.**

For the large stage, higher wattage Klieglights, 1000/2000 watt, with remote control electro-mechanically operated color frames, similar to units listed on page 1 for front lighting, are recommended.

GENERAL ILLUMINATION

AUDITORIUM

Requirements dictate best form of lighting for auditoriums. Following are typical of types used.

DOWNLIGHTS

No. 2164

Concealed type ceiling fixtures; provide high-intensity direct illumination through small hole in ceiling. Use concentrated filament type lamps. Straight down projection. Relamped from above. Ellipsoidal reflector; focusable lens system, cut-off framing shutters.

No. 2162	100 watt	$32.00
No. 2164	250/500 watt	36.00
No. 2166	1000 watt	60.00
No. 2168	1500/2000 watt	75.00

Angular projection units also available—see front lights page 1.

FRESNEL LENS UNITS

No 22 F 12

Flush inbuilt type ceiling fixtures; provide high intensity direct illumination without glare. Use general service lamps. Fresnel lens with painted risers in hinged frame; Alzak aluminum reflector. Complete with back box. Approved by Underwriters.

Circular lens units with cylindrical back box

No. 22F06	100 watt	6" dia. lens	$16.00
No. 22F08	150 watt	8" dia. lens	20.00
No. 22F12	200/300 watt	12" dia. lens	26.00
No. 22F14	300/500 watt	14" dia. lens	30.00
No. 22F16	500/750 watt	16" dia. lens	46.00

No 24 F 12

Square lens units with rectilinear back box

No. 24F06	100 watt	6" sq. lens	16.00
No. 24F08	150 watt	8" sq. lens	20.00
No. 24F12	200/300 watt	12" sq. lens	26.00

COVE LIGHTS

No 739-4

No 734

No 1741

Continuous strip lights for concealed indirect lighting. Made to suit job requirements — for fluorescent, luminline, filament tube, or screw base lamps. Straight or curved; any length, spacing, and circuiting required. Numerous designs. Particulars on request.

AISLES AND STAIRWAYS

No 2780

To enable patrons to find their way about in darkened auditoriums, following fixtures, which cast subdued lights downward, are recommended.

No 2677

No. 2780—Midget model for mounting on side of end seats adjoining aisle. For 6 watt 115 volt candelabra screw base lamps—size: 4⅝" L x 1¼" H x 1⅜" D. Price $2.60

No. 2677—Step light for stairways, mounted flush in riser. Louvered openings direct light to tread. Removable cast aluminum front. For 40 watt medium screw base lamp—size: 8" W x 4⅛" H x 3½" D. Price $5.00

No 676

No. 2676—Step light, similar to No. 2677, smaller size: 7" W x 3¼" H x 3½" D; for 40 watt lamp. Price $5.00

No. 676—Aisle light for flush wall mounting. Louvers direct light to floor. For 40 watt med. sc. base lamp. Size: 4⅞" W x 8¼" H x 3½" D. Price $5.00

For aisle entrances, stair landings, usher spots, passageways and exit areas, following low wattage downlight is serviceable. Flush ceiling type, projects beam of light straight downward through ½" hole. Relamps from below. Approved by Underwriters.

No 2145

No. 2145—100 watt downlight, with removable aperture plate, focusable lens system, cut-off framing shutters, spherical reflector. Price $32.00

ENTRANCE AND LOBBY

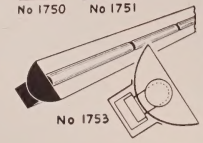
Under the marquee, Kliegl flush recessed Fresnel lens units and/or strip lights may be used to advantage for brilliant general illumination, with small Klieglights or spotlights for accent lighting. For the lobby: strip lights for coves, poster frames, wall panels, etc., are furnished to specifications.

FOYER AND LOUNGE

Soft subdued general illumination with accent lighting of murals, tapestries, pictures, statuary and other articles of decoration, is modern treatment for foyer and lounge rooms. Various forms of Kliegl lighting equipment are suitable for this purpose—selection dependent on architectural design. Collaboration with our engineers when planning is recommended.

No 1750

No 1751


No 1753

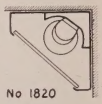
FLUORESCENT STRIPS

Standard and special designs, for tubular fluorescent lamps, are made to suit varying lighting schemes. Completely wired with inbuilt auxiliaries, in accord with Underwriters code. **No. 1750** channel strip without reflector. **No. 1751** compact design with continuous reflector for shallow coves. **No. 1753** for maximum light output, with continuous parabolic trough reflector of Alzak aluminum. Recessed and surface-mounted types also available.

CONTINUOUS LIGHT STRIPS

No 1815

Suitably designed fixtures for extended row of screw base or filament tube lamps, any length required, inbuilt or surface mounted, with or without glass panels or control lenses. **No. 1815** self contained cove strip for indirect lighting. **No. 1820** corner strip with series of prismatic lenses for direct illumination.


No 1820

BEAM PROJECTORS

Lens units with soft-edge or sharp-framing characteristics for accent lighting available in all types and sizes. Specific recommendations upon advisement of requirements.

EXITS

Following are the most widely used illuminated signs for exits—other types, and directional signs, also available.

FLUSH WALL TYPES

No 697

Mounted flush in wall. Back box and front frame separable parts.

Hinged-style front—cast bronze frame with hinged panel. Statuary bronze finish. Ruby glass face plate. Fancy white letters.

No.	Letters	Front Frame	Box Depth	Price
696	3"	14¼" x 7"	5"	$12.00
697	4"	15¾" x 9"	5"	14.00
699	6"	17¼" x 10⅜"	5"	17.00
698	8"	18" x 12"	5"	20.00
697W	Same as No. 697, with wire guard			17.00

Screw-on style front—sheet metal frame, sprayed bronze finish. Ruby glass face plate. Plain white letters.

No.	Letters	Front Frame	Box Depth	Price
6945	5"	12½" x 8"	3½"	$6.00
6946	6"	15" x 9"	3½"	7.00
6948	8"	17" x 11½"	3½"	8.50

No 685

Mounted on surface of wall, or semi-recessed-projecting ½" for removal of glass.

SURFACE TYPES

Single face; glass slides in from side. Sheet metal box, sprayed gold-bronze finish. Ruby glass face plate. Plain white letters. Double face also available.

No.	Letters	Box	Box Depth	Price
680	3"	10" x 5"	3½"	$3.50
685	5"	11½" x 6¾"	3½"	4.00
686	6"	14" x 8"	3½"	4.50
687	8"	12" x 10"	3½"	4.50
690	8"	15¾" x 10"	3½"	4.75

No 711

Mounted on standard 4" octagonal wall-outlet box.

OUTLET BOX TYPE

No. 711—Includes base plate, medium screw base receptacle, red lens with opaque 2" lettering, and hinged retaining ring. Overall diameter 5". Brushed brass, statuary bronze, or polished chrome finish. Price $5.00

EXTERIOR

No 1602

For floodlighting facade of building, following weatherproof outdoor floodlights, with polished Alzak aluminum reflector and glass front, for general service lamps, are recommended.

			Price
No. 1601	150 watt	8" dia.	$9.50
No. 1602	200 watt	12" dia.	13.00
No. 1603	300/500 watt	14" dia.	25.00
No. 1605	750/1000	16" dia.	35.00

Originators and Manufacturers of the Famous "KLIEGLIGHTS"

KLIEGL BROS

UNIVERSAL ELECTRIC STAGE LIGHTING CO., INC.

Established 1896

321 West 50th Street
New York, N. Y.
Telephone: COlumbus 5-0130

Kliegl products are applicable to practically every field of illumination—for: churches, schools, stores, restaurants, ballrooms, museums, cabarets, gymnasiums, and other classifications. Our representative will render assistance in the selection, layout, or design of effective lighting equipment. *Sketches, details, structural dimensions, etc., furnished on request.*

(*Continued from page 292*)

advertising head of one of the biggest theatre circuits in the country follows an almost adamant rule never to have more than five words of copy on the screen at one time.

This chap also loves the use of animation for his trailers and does a clever job of keying the animation to the dramatic force of his copy. He has an advantage over most managers in that his home office is only a few blocks away from the trailer company which shoots his stuff, enabling him to supervise the work personally. However, since most trailer men are quite adept at following even written instruction, it should not be too difficult for the theatre manager of any city to get what he wants in special effects. And, there might be a word of caution against over-animation. This results in the animation taking precedence over the copy, as far as the audience is concerned. Such trailers become "eye-exercises" for your patrons instead of selling mediums.

Cheap newspaper ads need not always be type ads. In the case of even special shows, it is always possible to find some sort of illustration that can be cut from mats that you happen to have on hand. And, even without mats, it might be remembered that the average newspaper can reproduce anything drawn in black and white, and the cost of simple line-engravings is not excessive when there is a chance of selling a good show with it.

11 Basic Sales Appeals

The Advertising Department of the M & P Circuit of Boston, Mass., summarizes the basic approaches to any show advertising.

Following are the 11 "appeals":

SECURITY APPEAL—Any technique we use to make the reader feel the proposal is safe and sound.

CURIOSITY APPEAL—Anything we do to arouse interest by making the customer unconsciously say to himself, "Gee, what is this?"

ACQUISITIVE APPEAL—Any method which makes the customer feel he is gaining an extra price or profit advantage.

PROGRESS APPEAL—Any method of making the customer feel he is getting ahead, either physically or mentally.

ACTIVITY APPEAL—Any technique which appeals to the customer's unconscious desire to be active (that overcomes boredom).

COMPANIONSHIP APPEAL—Any friendly act or gesture, great or small.

SUPERIORITY APPEAL—Any word or act which allows the customer to realize he is an "individual" and not just a "possible sale"—any sincere thing which makes him feel "important."

FAMILY AND GROUP APPEAL—Any method whereby the customer feels that what the seller wants him to buy will be beneficial to his "group," i.e., his country, his state, his party, his town, his family. It is esprit de corps, loyalty, patriotism.

HEALTH AND BEAUTY APPEAL—Any method of making the customer conscious of the sense of physical well being or aesthetic thrill your product may give him.

SEX APPEAL—All by itself, it is technically the appeal to the old biological urge and so it is dangerous to use *except as it is combined with some other appeal such as companionship, beauty, superiority, activity, etc.,* then it is a powerful motivator.

RELIGIOUS APPEAL—The method employed to convey a conviction or permanency is safety and spiritual uplift.

Safeguards that Save Damage Suits

Under the glass of each manager's desk and on the projection room wall—these simple questions will save many headaches.

THE State Board of Motion Picture Censors co-operating with the State Insurance Commissioner in a check-up of theatres throughout Maryland, with the exceptions of Baltimore, used special report blanks including a number of questions, as follows:

	YES	NO
Is a "No Admittance" sign posted at entrance of projection booth?	☐	☐
Do ushers or other unauthorized persons frequent booth?	☐	☐
Is operator experienced and careful in his duties?	☐	☐
Is relief operator competent?	☐	☐
Are "No Smoking" signs posted in booth?	☐	☐
Was anyone smoking in booth?	☐	☐
Are walls free from posters, pictures, placards, etc?	☐	☐
Is booth clean and orderly?	☐	☐
Does booth contain clothing, magazines, newspapers, furniture?	☐	☐
Is fire door on entrance in good working order and is it held open or fastened open except by fusible link?	☐	☐
Are shutters on peep and focus holes in good working order and are they held open except by fusible links?	☐	☐
Is film in booth kept in an all-metal cabinet?	☐	☐
Is there a can with a self-closing lid for scrap film?	☐	☐
Was any film found outside of booth; how much; where?	☐	☐
Does amount of film cement in booth exceed three ounces?	☐	☐
Is there a sand pail for hot carbon?	☐	☐
Is there any temporary or defective wiring in booth?	☐	☐
Are there any portable emergency heaters in booth?	☐	☐
Is there a carbon tetrachloride extinguisher in booth?	☐	☐
Are aisles and stairways to fire exits clear?	☐	☐
Are exit doors unlocked and in working order when theatre is occupied?	☐	☐
Are exit lights properly maintained?	☐	☐
Are "No Smoking" signs posted in auditorium?	☐	☐
Is smoking permitted by audience or others?	☐	☐
Are suitable ash trays provided in rest rooms?	☐	☐
Is heating plant enclosure free of rubbish, ashes and odd storage?	☐	☐
Are ashes deposited in metal containers?	☐	☐
Is oil burning equipment defective, improperly maintained or leaking?	☐	☐
Are metal containers provided for paper towels in rest rooms?	☐	☐
Are janitors' supplies and utensils kept in an approved manner?	☐	☐
Are janitors' used cleaning rags properly disposed of?	☐	☐
Are stage dressing rooms clean and orderly?	☐	☐
Are extinguishers in theatre conspicuously located and are soda and acid extinguishers recharged annually and dated	☐	☐

AIR CONDIT.

Some Quantity Buying Saves Money

The purchasing executive for a prominent circuit discusses the miscellaneous items that can be warehoused economically.

BY FRANK H. MYERS

THE first thing to be said about quantity buying is that it saves money. It also prevents over stocking of supplies, enables the concern to render better service to its individual theatres, and maintains perfect control over the purchasing of the items stocked. A warehouse can be maintained whether you have two theatres or 40. It should be centrally located, and it is surprising how small a space is actually needed. One concern serving 23 theatres has two rooms about 12 feet square each. The small concern could have it located in one of its theatres. The usual storage space used by the porter would probably suffice.

IT is just as feasible for the small theatre operation as the circuit to take advantage of this method of saving money. The small operation should take care to stock items in larger quantities which will not deteriorate with age, such as, fuses, brooms, soaps, detergents, etc. Perhaps the best method is to analyze requirements of the items to be stocked for a period of six months or one year, then purchase them in the smallest quantities on which wholesale prices can be obtained. For instance, if 1000 pounds of soap powder is used per year, it would be best to order this five times a year in 200 pound barrels, on which one can get a wholesale price. Brooms, mops, fuses, and similar articles are often purchased by theatres from a nearby store, because it is handy, and at a price perhaps twice the amount necessary. Money can often be saved in transportation by buying in large quantities.

ONE person, the purchasing agent, should do all the buying and have charge of the stockroom. In a small organization, this could be one of the managers whose theatre perhaps operates less hours than the others. He should take advantage of the suggestions and counsel of the balance of the personnel, from porters to managers. When a substitute item of poorer quality is furnished for one which has been used, it is amazing how quickly it will be detected and reported on. When a material pleases the majority of the users, both in quality and in price, it must be good. In other words, two heads are better than one, and in following the opinions of the majority the person in charge will invariably procure the best products. This automatically eliminates products which are being used just because one person likes to favor a friend of his in business, or has an idea that a product is good because "it costs more," and like examples, when perhaps a less expensive one is, in reality, more effective.

Frank H. Myers, purchasing agent of the Wometco Theatres, operating theatres in Florida and Bahamas, has spent 16 years in the theatre business, starting at the Temple, Miami, Fla., as an usher at the Capitol, a Wometco house. He worked as usher, doorman, chief usher, and in the accounting department until 1931. Until 1934 he was a poster artist for the circuit, and for two years he worked for the Dixie Theatre Company, an independent circuit operating three houses in West Palm Beach, Fla. He became a partner and general manager from 1936-1939. He rejoined Wometco and was made purchasing agent two years ago, succeeding L. V. Knuttnauer, who formerly owned the Midwest Theatre Supply Company of Chicago. His knowledge and experience has covered all phases, in exhibition, booking, operating, buying, etc., a large part of which he learned under Mitchell Wolfson, co-owner of Wometco Theatres with Sidney Meyer.

IT is best not to use one person's judgment when ordering a new item, or replacing one already in use. For example, suppose Mr. X has a new kind of pine oil which is lower in price than the one being used, and which he claims is better. The buyer can obtain a sample or buy a small quantity, and after it has been tested in a number of theatres, if they confirm the claims of Mr. X, it can be purchased. This eliminates guess work and tends to improve the quality of the merchandise used.

A separate record system should be kept for the warehouse. The supplies should be ordered on a form, by the various theatres, which is signed by the purchasing agent. A card system can be kept, with a card for each item, which forms a perpetual inventory. Purchases and orders withdrawn are listed and balance on hand always kept. When only a certain amount remains, the product should be reordered. This amount can be judged by the length of time it takes for delivery, and the probable consumption during that time. This makes one person responsible for the supplies on hand, and consequently, there aren't several people buying, with the chance of failing to reorder items which are exhausted. The purchasing agent should see that the supplies are requisitioned in small amounts by the individuals, such as: one gallon of hand soap, 10 lbs. of detergent, or 50 positive and 50 negative carbons at a time. This will tend to eliminate waste, because an employee will many times be extravagant in the use of a supply if there is an unlimited quantity on hand. He should be sure that the warehouse is not overstocked on any items. By a monthly comparison of the consumption of comparative situations, careless usage and waste are readily detected.

THE warehouse can also function as the place to keep equipment which is used by all the theatres, such as a spare projection head, carpet cleaning machine, or other items of which there might only be one or two for use by the entire circuit. A record is kept on each one, and its present location or user noted at all times. When it is returned, it is checked to ascertain that it is in good condition and has not been damaged.

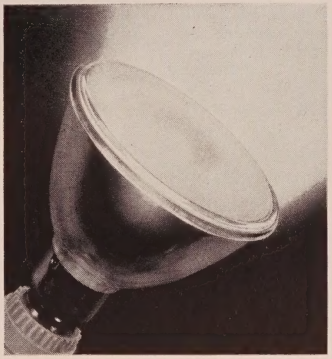
ATTACHED is a list of the supplies carried in the Wometco theatres stockroom. This list is a result of 15 years buying by the concern, and any theatre man can quickly look over this list and possibly add to it or cut it down. Money is saved in purchasing every one of the items on this list in quantity, except carbons.

Brooms
Broom handles
Bowl cleaner
Bow ties
Bowl brush
Collars—Plaza and Tux
Carbon paper
Chewing Gum remover
Carpet sweepers
Pine oil disinfectant
Health Chlorodor disinfectant
Dickies
Deodorant blocks
Fuses 35 amp.
Fuses 125 amp.
Fuses 100 amp.
Film cement
Floor brushes
Flashlight batteries
Flashlight bulbs
Flashlight cases
May flashlight cases
Black masking
25030 Fuses—30 amp.
25060 Fuses—60 amp.
25070 Fuses—70 amp.
915 Fustats 15 amp.
30 amp. plug fuses
25 amp. plug fuses
15 amp. plug fuses
Fuses—200 amp.
Fuses—300 amp.
Gelatine—all colors
Metal polish
Murphy's oil soap
Mop handles
Mop heads
Moping powder
Mosquito spray
Patch-a-seat kit
Paste
Pyrethrum Powder
Reels
Rags—10 pounds
Rags—laundered
Scrub brushes
Simplex grease
Simplex oil
Sanitary napkins
Hand soap
Soap dispenser cap
Syntex alcohol
Swivel sockets
Spot bulb 100w
Spot bulb 75w
Spot bulb 60w
Spot bulb 40w
Spot bulb 25w
Tank balls
Tissue
Towels
Typewriter slides
Tungar bulbs
Thumb tacks
Towel receptacles
Umbrellas
Umbrella, doorman's
Wax, floor
Square washers
Waste cans
Filters—sizes for all air-conditioned theatres
Carbons—sizes used in all theatres on circuit

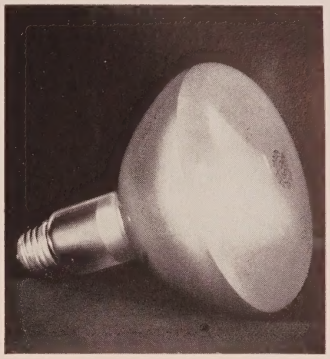
Because General Electric makes more than 9000 different kinds of lamps . . .

. . . There is a kind and type of lamp for every theatre lighting service. A few of them are shown here. G-E MAZDA lamps represent the result of more than 40 years of research and development. Each of them must pass 480 tests, checks, and inspections in manufacture to guard against imperfections that might affect their performance in service. Every year G-E MAZDA lamps give more light for the same current because they are *made to stay brighter longer.* Always look for the monogram GE. General Electric Company, Nela Park, Cleveland, Ohio.

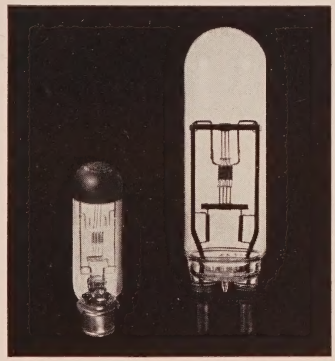
G-E MAZDA F (fluorescent) lamps in gold, pink, blue, green, red, white and daylight are now available at new low prices, and make possible the use of color at still lower cost. They are recommended for use only with equipment providing good power factor. For example, the 15 watt daylight size as of January 1, 1941 lists at only 85c.



G-E MAZDA PROJECTOR lamps combine reflector, lens, and filament in one sealed-in unit, protected from dust, moisture and deterioration. Both Spotlight and Floodlight types are small in size and light in weight and come in 150 and 300 watt sizes. The 150 watt Projector lamp was previously reduced to only $1.40.

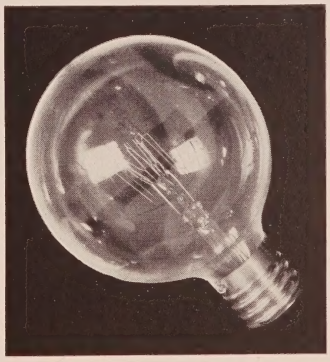


G-E MAZDA REFLECTOR lamps are similar to the projector lamps except they are smaller and lighter in weight. Because their lenses are not made of weather-resistant glass, reflector lamps are recommended for use indoors or in sheltered locations. The 300 watt size (both Spot and Flood types) has recently been reduced to only $1.70.



G-E MAZDA LAMPS for motion picture projection have the greatest amount of tungsten in the smallest amount of space, and provide a highly concentrated light source. The 1000 watt (to the left) now costs $6.00 and the 2100 watt lists at $16.50.

GENERAL LIGHTING SERVICE lamps fulfil most of the lamp requirements for ordinary theatre use. Made in sizes from 6 up to 1500 watts, practically this whole line has been reduced in price. For example, the 40 watt size is now only 13c.



G-E MAZDA SPOTLIGHT lamps are available in many sizes from 100 to 2000 watts. Widely used for displays and stage lighting. With this range, any display or stage lighting problem may easily be solved. The 250 watt size (illustrated) is now $1.15.

G-E MAZDA LAMPS

GENERAL ELECTRIC

For more information, see your nearest Theatre Supply Dealer selling G-E MAZDA Lamps

GENERAL ELECTRIC CO.

AIR CONDIT.

Supply Dealers of the Continent

A detailed listing of all dealers who specialize in rendering services to the theatres of the United States and Canada.

THE average theatreman often fails to comprehend the magnitude of the national organization of supply dealers and outlets which handles the products of more than 500 manufacturers in the United States and Canada. Some idea of the distribution system necessary to satisfy the vast equipment, maintenance, and supply needs of the 17,000 United States theatres and 1200 Canadian houses may be gained from the list that appears on the following pages. These are the sales and distribution outlets for more than 5000 products fabricated by the manufacturers, and it is reliably claimed that these stores account for 40 percent of the theatre industry's annual $35,000,000 purchases.

Each year sees more products of general use but having some particular theatrical application being added to the dealers' shelves. A total of 133 firms in the United States and 16 in Canada serve the theatremen.

UNITED STATES

ALABAMA

QUEEN FEATURE SERVICE, INC.
1912½ Morris Avenue
Birmingham, Alabama
Personnel—*Manager:* Miss Vivian Harwell
Salesman: J. Braxton Colley
Counter Man: W. K. Couch
Area Served—Alabama, Tennessee, Mississippi, and Northern Florida

CALIFORNIA

BRECK PHOTOPLAY SUPPLY COMPANY
1969 South Vermont Avenue
Los Angeles, California
Personnel—No information
Area Served—No information

JOHN P. FILBERT COMPANY
1956 South Vermont Avenue
Los Angeles, California
Personnel—*Owner:* John P. Filbert
Manager: Don McLaren
Salesman: Bob Beretta
Area Served—Southern California, Arizona and Southern Nevada

F. A. MILLS COMPANY
2202 South Vermont Avenue
Los Angeles, California
Personnel—No information
Area Served—No information

MOTION PICTURE ACCESSORIES COMPANY
2200 South Vermont Avenue
Los Angeles, California
Personnel—*Owner:* M. Dabney
Manager: J. B. Dabney
Area Served—Southern California

NATIONAL THEATRE SUPPLY COMPANY
1961 South Vermont Avenue
Los Angeles, California
Personnel—*Branch Manager:* Arthur DeStefano
Office Mgr.: L. S. Hunt
Salesmen: L. B. Mace, Henry G. Schick, C. L. Russell, H. A. Caballero, H. E. Patterson
Counter Man: R. C. Green
Area Served—Southern California, Arizona and Southern tip of Nevada

NATIONAL THEATRE SUPPLY COMPANY
255 Golden Gate Avenue
San Francisco, California
Personnel—*Manager:* Lloyd C. Ownbey
Salesmen: R. L. Schultz, Jr., Ralph Pries
Counter Man: Clay Robinson
Area Served—California, Nevada and Oregon

PACIFIC COAST THEATRE EQUIPMENT COMPANY
250 Golden Gate Avenue
San Francisco, California
Personnel—*Owner:* J. G. Riley
Salesman: L. Riley
Area Served—Northern California

WALTER G. PREDDEY
187 Golden Gate Avenue
San Francisco, California
Personnel—*Owner:* Walter G. Preddey
Manager: Robert O. Bemis
Counter Man: L. Jones
Area Served—California, Nevada, Oregon and Arizona

PROJECTION EQUIPMENT MAINTENANCE COMPANY
1975 South Vermont Avenue
Los Angeles, California
Personnel—*Owners:* L. M. Wutke and C. M. Fowler
Counter Man: Mack Lunt
Area Served—Southern California, Arizona, New Mexico and Southwestern Nevada

B. F. SHEARER COMPANY
1964 South Vermont Avenue
Los Angeles, California
Personnel—*Manager:* C. Frank Harris
Salesmen: Weldon Girard, Glenn Slipper
Counter Man: Henry Grussing
Area Served—Southern California, Arizona, Southern Nevada and Western New Mexico

B. F. SHEARER COMPANY
243 Golden Gate Avenue
San Francisco, California
Personnel—*Manager:* H. I. Tegtmeier
Salesmen: Alan R. Brake, Harold M. Brake, Alvin Learman
Area Served—Northern California, Nevada and Hawaiian Islands

WESTERN THEATRICAL EQUIPMENT COMPANY
222 Golden Gate Avenue
San Francisco, California
Personnel—No information
Area Served—No information

COLORADO

GRAHAM BROTHERS
546 Lincoln Street
Denver, Colorado
Personnel—*Owners:* J. M. and H. W. Graham
Area Served—Colorado, New Mexico, Wyoming, Nebraska and Black Hills of S. Dakota

NATIONAL THEATRE SUPPLY COMPANY
2111 Champa Street
Denver, Colorado
Personnel—*Manager:* J. J. Morgan
Salesman: Joe B. Stone
Counter Man: Dick Lutz
Area Served—Colorado, New Mexico, Wyoming, Western Nebraska, Eastern Montana and Black Hills of S. Dakota

CONNECTICUT

MODERN THEATRE EQUIPMENT CORPORATION
130 Meadow Street
New Haven, Connecticut
Personnel—*Manager:* Louis Phillips
Counter Man: Stephen Bersansky
Area Served—Connecticut

NATIONAL THEATRE SUPPLY COMPANY
122 Meadow Street
New Haven, Connecticut
Personnel—*Manager:* Wm. J. Hutchins
Salesman: Victor Cassella
Area Served—Connecticut

DISTRICT OF COLUMBIA

BEN LUST THEATRE EQUIPMENT
1001 New Jersey Avenue, N. W.
Washington, D. C.
Personnel—No information
Area Served—No information

FLORIDA

UNITED THEATRE SUPPLY CORPORATION
110 North Franklin Street
Tampa, Florida
Personnel—*Owners:* O. R. Busler and F. L. Alig, Jr.
Area Served—Florida and Southern Georgia

GEORGIA

CAPITOL CITY SUPPLY COMPANY, INC.
161 Walton Street, N. W.
Atlanta, Georgia
Personnel—*Manager:* O. J. Howell
Salesman: J. F. Willard
Area Served—Georgia, Alabama, Tennessee, Florida and Mississippi

NATIONAL THEATRE SUPPLY COMPANY
187 Walton Street, N. W.
Atlanta, Georgia
Personnel—*Manager:* J. C. Brown
Office Manager: H. L. Chafin
Salesmen: R. M. Goldsmith, W. C. Alexander
Counter Man: W. C. Hutt, Jr.
Area Served—Georgia, Florida, Alabama and Tennessee

SOUTHLAND THEATRE EQUIPMENT COMPANY
183 Walton Street, N. W.
Atlanta, Georgia
Personnel—*Owners:* Samuel M. Berry and P. H. Savin
Salesman: H. L. Cheek
Area Served—Alabama, Georgia, Florida and Tennessee

WIL-KIN THEATRE SUPPLY, INC.
150-54 Walton Street, N. W.
Atlanta, Georgia
Personnel—*Manager:* Nash Weil
Sales Manager: Harry M. Paul
Salesmen: G. Henry Thurmond, George G. Tarrant, Milton F. B. Mueller
Counter Man: E. T. Nance
Area Served—Georgia, Florida, Alabama and Eastern Tennessee

ILLINOIS

ABBOTT THEATRE EQUIPMENT COMPANY
1311 S. Wabash Avenue
Chicago, Illinois
Personnel—*Owner:* Harold Abbott
Counter Man: C. Kontos
Area Served—Illinois, Indiana, Wisconsin and Michigan

DROLL THEATRE SUPPLY COMPANY
351 East Ohio Street
Chicago, Illinois
Personnel—No information
Area Served—No information

JOE GOLDBERG, INC.
1245 West Wabash Avenue
Chicago, Illinois
Personnel—*Owner:* Joe Goldberg
Salesmen: J. Lieberthal, C. Williams
Area Served—Illinois, Western and Southern Indiana

GUERCIO & BARTHEL COMPANY
1241 South Wabash Avenue
Chicago, Illinois
Personnel—No information
Area Served—No information

MOVIE SUPPLY COMPANY, LTD.
1318 South Wabash Avenue
Chicago, Illinois
Personnel—*Owners:* S. S. Behrend and M. A. Behrend
Area Served—Central States

NATIONAL THEATRE SUPPLY COMPANY
1325 South Wabash Avenue
Chicago, Illinois
Personnel—*Manager:* R. W. Dassow
Salesmen: M. Salkin, M. Morrison, F. Keilhack, O. Wells and G. Libera
Counter Man: R. Harpster
Area Served—Northern Illinois, Northern Indiana, Dubuque and Davenport in Iowa

STANLEY THEATRE SUPPLY COMPANY
1235 South Wabash Avenue
Chicago, Illinois
Personnel—*Owner:* Stanley Levine
Salesmen: A. Miltenberg, H. Chatkin
Counter Man: R. Lindhout
Area Served—Illinois, Indiana, Southern Wisconsin

INDIANA

EXHIBITORS EXCHANGE, INC.
402 North Illinois Street
Indianapolis, Indiana
Personnel—No information
Area Served—Central Indiana

GER-BAR, INC.
442 North Illinois Street
Indianapolis, Indiana
Personnel—*Manager:* Ben Hopkins
Area Served—Indiana and Kentucky

INDIANA THEATRE EQUIPMENT CORPORATION
316 North Illinois Street
Indianapolis, Indiana
Personnel—*Owners:* Indiana Theatre Equipment Corp.
Manager: C. J. Williams
Salesman: Joe Bommershiem
Area Served—Indiana and Western Kentucky

NATIONAL THEATRE SUPPLY COMPANY
436 North Illinois Street
Indianapolis, Indiana
Personnel—*Salesman:* A. M. True
Counter Man: R. W. Young
Area Served—Southern and Central Indiana, Kentucky (Louisville and vicinity)

IOWA

DES MOINES THEATRE SUPPLY COMPANY
1121 High Street
Des Moines, Iowa
Personnel—*Owners:* A. E. Thiele and R. G. Faulds
Salesman: H. N. Sutton
Area Served—Iowa

NATIONAL THEATRE SUPPLY COMPANY
1115 High Street
Des Moines, Iowa
Personnel—*Manager:* A. C. Schuyler
Salesmen: H. W. Loeffler, H. L. Frost, D. E. Songer, Olive H. Heifner
Area Served—Iowa, Eastern Nebraska and Southern S. Dakota

KANSAS

SOUTHWEST THEATRE EQUIPMENT COMPANY
309 West Douglas Avenue
Wichita, Kansas
Personnel—*Owner:* C. D. Peck
Area Served—Kansas, Missouri, Oklahoma, Arkansas, Texas, New Mexico

KENTUCKY

CENTRAL THEATRE SUPPLY
Tyler Hotel
Louisville, Kentucky
Personnel—*Owner:* Arthur V. Sheckler
Salesman: Moses I. Beeler
Area Served—Kentucky and Southern Indiana

FALLS CITY THEATRE EQUIPMENT COMPANY
427 South Third Street
Louisville, Kentucky
Personnel—*Owner:* W. E. Carrell
Salesmen: J. Stoner Hadden, James E. Thompson, Raymond Mattingly and Thomas McHugh
Area Served—Kentucky, Southern Indiana and Northern Tennessee

LOUISIANA

DELTA THEATRE SUPPLY, INC.
214 South Liberty Street
New Orleans, Louisiana
Personnel—*Owners:* M. M. Press and John F. Elzey
Area Served—Louisiana, Mississippi, Alabama, Florida

LOUISIANA MOTION PICTURE EQUIPMENT COMPANY
1414 Cleveland Avenue
New Orleans, Louisiana
Personnel—No information
Area Served—No information

National Theatre Supply Company
220 South Liberty Street
New Orleans, Louisiana
Personnel—*Manager:* W. A. Hodges
Salesman: T. W. Neely
Area Served—Louisiana, Alabama, Florida and part of Mississippi

MARYLAND

J. F. Dusman, Inc.
213 North Calvert Street
Baltimore, Maryland
Personnel—No information
Area Served—No information

National Theatre Supply Company
417 St. Paul Place
Baltimore, Maryland
Personnel—*Manager:* N. C. Haefele
Salesman: L. J. Wallman
Counter Man: I. K. Johnson
Area Served—Maryland, District of Columbia and Virginia

MASSACHUSETTS

Capitol Theatre Supply Company
28 Piedmont Street
Boston, Massachusetts
Personnel—*Owners:* C. M. Cox, Pres.; K. R. Douglass, Treas.; L. L. Foster, Sec'y; F. Gray, Asst. Sec'y
Manager: K. R. Douglass
Salesmen: W. Hawkins, M. Sickles, D. Pickering, C. Fish, L. Foster
Counter Man: F. Sullivan
Area Served—Massachusetts, New Hampshire, Vermont, Connecticut, Maine, Rhode Island

Independent Theatre Supply Company, Inc.
28 Winchester Street
Boston, Massachusetts
Personnel—*Manager:* E. K. Hosmer
Salesmen: R. D. Quint, R. L. Hosmer
Counter Man: J. B. Devlin
Area Served—Maine, Massachusetts, Rhode Island, Vermont, New Hampshire, Connecticut

National Theatre Supply Company
40 Piedmont Street
Boston, Massachusetts
Personnel—*Manager:* H. J. McKinney
Asst. Manager: Rudy Wetter
Salesmen: Ernie Comi, Roy Hammell, Dan Fleetham
Counter Man: Emil Franzi
Area Served—Maine, Massachusetts, New Hampshire, Vermont, Rhode Island

Standard Theatre Supply Corporation
78 Broadway
Boston, Massachusetts
Personnel—*Manager:* J. T. Loftus
Salesmen: F. Grady, P. Knox
Area Served—New England

MICHIGAN

Amusement Supply Company
208 West Montcalm Street
Detroit, Michigan
Personnel—*Manager:* K. L. Ruben
Area Served—Michigan

"Ernie" Forbes Theatre Supply
212-14 West Montcalm Street
Detroit, Michigan
Personnel—*Owner:* Ernest H. Forbes
Salesmen: Wm. Rennie, E. C. Murphy, J. Kramer
Counter Man: H. Forbes
Area Served—Michigan

McArthur Theatre Equipment Company
2501 Cass Street
Detroit, Michigan
Personnel—No information
Area Served—No information

National Theatre Supply Company
2312 Cass Avenue
Detroit, Michigan
Personnel—*Manager:* W. J. Turnbull
Salesmen: C. Williamson, S. C. Waldron, H. Atkinson
Counter Man: L. Burmeister
Area Served—Michigan

MINNESOTA

Elliott Film and Theatre Equipment Company
72 Glenwood Avenue
Minneapolis, Minnesota
Personnel—*Owner:* E. Louise Elliott
Manager: D. R. Murray
Salesman: John J. Mark
Counter Man: E. Hanson
Area Served—Minnesota, N. Dakota, S. Dakota, Northern Iowa and Wisconsin

Frosch Theatre Supply
38 Glenwood Avenue
Minneapolis, Minnesota
Personnel—*Owner:* Maitland E. Frosch
Manager: Henry Miller
Salesmen: S. J. Segal, Wm. Hurd, Chas. Speckman
Counter Man: Russell Currier
Area Served—Minneapolis, N. Dakota, S. Dakota, Northwestern Wisconsin, Northern Iowa and Michigan, and Eastern Montana

National Theatre Supply Company
56 Glenwood Avenue
Minneapolis, Minnesota
Personnel—*Manager:* A. T. Crawmer
Asst. Manager: H. P. Hansen
Salesman: L. J. Ashwin
Area Served—Minnesota, N. Dakota, Western Wisconsin and Eastern S. Dakota

Ruliffson Supply Company
1011 Currie Avenue
Minneapolis, Minnesota
Personnel—*Owner:* Don H. Ruliffson
Salesman: R. C. Lahti
Counter Man: Thomas Mooney
Area Served—Minnesota, N. Dakota, S. Dakota and Western Wisconsin

Western Theatre Equipment Exchange
45 Glenwood Avenue
Minneapolis, Minnesota
Personnel—No information
Area Served—No information

MISSOURI

Erker Brothers
610 Olive Street
St. Louis, Missouri
Personnel—*Owners:* Erker Bros. Optical Co.—E. A. Erker, Pres.; A. C. Erker, Vice-Pres.
Manager: H. G. Lihou
Salesmen: G. S. Howard, R. T. Stiegmeier
Area Served—St. Louis and nearby territory

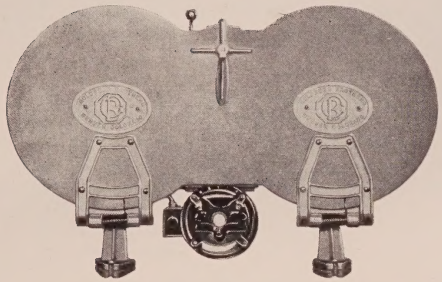
Exhibitors Supply Company
3236-38 Olive Street
St. Louis, Missouri
Personnel—*Manager:* Ray G. Colvin
Salesman: James Killian
Area Served—Eastern Missouri and Southern Illinois

National Theatre Supply Company
3210 Olive Street
St. Louis, Missouri
Personnel—*Manager:* W. C. Earle
Salesman: E. J. Nelson
Area Served—Southeastern Kentucky, Southern Illinois, Eastern Missouri

L. T. Rockenstein Company
3327 Locust Street
St. Louis, Missouri
Personnel—*Owner:* L. T. Rockenstein
Area Served—Eastern Missouri and Southern Illinois

Missouri Theatre Supply Company
115 West 18th Street
Kansas City, Missouri
Personnel—*Owners:* Mrs. Maxine and Mr. J. Eldon Peek
Manager: L. J. Kimbriel
Area Served—Kansas, Missouri, Iowa, Nebraska, Oklahoma and Arkansas

GOLDBERG BROTHERS
METAL PRODUCTS



NEW AUTOMATIC FILM REWINDER

Passed by the board of Fire underwriters, accommodates 15-inch reels and smaller . . . reels slip on spindles quickly and easily. The rewinder is equipped with an automatic stop.
New Goldberg Rewinder is made of heavy cast aluminum, carefully machined . . . doors open on extra heavy counter-balanced spring hinges . . . a large handle keeps the door perfectly tight. A control handle for starting.

"NO DRAFT" SPEAKING TUBE

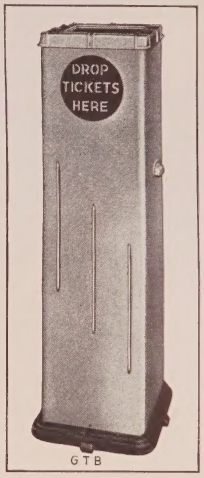
Prevents Drafts . . . Dependable
Good Looking . . . Economical

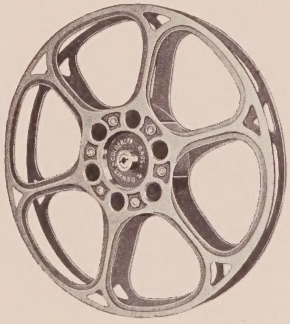
You do away with colds, sore throat and the necessity for leave of absence once you install this efficient speaking tube. It's clever, good-looking and will fit any opening from 2¼" to 4¼". Consists of two rust resisting metal plates, chromium plated, with washers and a screw . . . easy to install.

GOLDBERG TICKET BOX

Attractive looking, made of heavy high grade steel, baked enamel crackle finish and aluminum polished top. Made in two styles: G.T.B. has glass baffles and cast iron base. P.T.B. has no glass baffles nor cast iron base. Top has slot for depositing tickets.

Made in following colors:
ALUMINUM RED
LIGHT BLUE





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are the reels in the biggest demand today by projectionists . . . beautiful in appearance, carefully machined, they are light, strong, and substantially made. The patented lock holds the reel solid . . . runs perfectly true . . . 6 slots provide easy threading. Each packed in individual cartons, 2,000 ft.
Reels in the following sizes:

15" dia. 5" hub	14½" dia. 4" hub
14½" dia. 5" hub	14" dia. 4" hub

Approximate weight 2½ pounds each.

In ordering specify size of hub required.

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Order from your Theatre Supply Dealer

GOLDBERG BROTHERS, 3500 Walnut Street, DENVER, COLO.

National Theatre Supply Company
223 West 18th Street
Kansas City, Missouri
Personnel—*Manager:* J. W. Shreve
Salesmen: J. H. Kelley, C. W. Gano
Counter Man: C. D. Whitney
Area Served—Kansas, Western Missouri from Jefferson City

Stebbins Theatre Equipment Company
1804 Wyandotte Street
Kansas City, Missouri
Personnel—*Owners:* Mrs. U. S. Tabor, Pres.; C. H. Badger, Vice-Pres. & Treas.; M. Mobry, Sec'y
Manager: C. H. Badger
Salesmen: W. A. Porter, Ian Easterwood
Area Served—Western Missouri, Kansas and Northern Oklahoma and Arkansas

MONTANA

Western Theatre Equipment Company
107 Granite Street
Butte, Montana
Personnel—No information
Area Served—No information

NEBRASKA

Quality Theatre Supply Company, Inc.
1511 Davenport Street
Omaha, Nebraska
Personnel—*Owners:* Carl White and Lynn White
Counter Man: W. F. Granville
Area Served—Western Iowa, Eastern Nebraska and Southern S. Dakota

Scott Ballantyne Company
222 North 16th Street
Omaha, Nebraska
Personnel—*Owner:* R. S. Ballantyne
Manager: Beverly Ballantyne
Salesmen: E. A. Harms, E. D. Gaw, F. A. Thomassen
Counter Man: R. D. Johnson
Area Served—Central States

Western Theatre Supply Company
214 North 15th Street
Omaha, Nebraska
Personnel—*Owner:* F. A. Van Husan, Pres.
Manager: H. Harvey
Salesmen: Harold Neumann, A. Collins
Counter Man: Harry Coyne
Area Served—Nebraska to N. Platte, South Central S. Dakota and Iowa

NEW MEXICO

Eastern New Mexico Theatre Supply Company
Clovis
New Mexico
Personnel—*Owners:* Hardwick Bros.
Manager: E. R. Hardwick
Salesman: E. R. Hardwick
Area Served—Western Texas, Eastern New Mexico

NEW YORK

Empire Theatre Supply Company
1033 Broadway
Albany, N. Y.
Personnel—No information
Area Served—No information

National Theatre Supply Company
962 Broadway
Albany, N. Y.
Personnel—*Manager:* R. P. Rosser, Jr.
Salesman: W. B. Estes
Counter Man: V. M. Stockholm
Area Served—Central New York State

Auburn Theatre Equipment Company
5 Court Street, P. O. Box 112
Auburn, N. Y.
Personnel—*Owner:* F. W. Spreeter
Salesmen: K. Sharp, C. Conners
Counter Men: E. Dean, Francis Carley
Area Served—New York State

Becker Theatre Equipment, Inc.
492 Pearl Street
Buffalo, N. Y.
Personnel—*Manager:* A. Becker, Pres.
Salesman: Irwin Alpern
Mechanic: Bill Johnson
Area Served—Western, Central and Southern New York

National Theatre Supply Company
500 Pearl Street
Buffalo, N. Y.
Personnel—*Manager:* V. G. Sandford
Counter Man: G. R. George
Area Served—New York State incl. Syracuse and Binghamton

United Projector & Film Corp.
228 Franklin Street
Buffalo, N. Y.
Personnel—*Manager:* G. W. Linden
Sales Manager: G. H. Breneman
Counter Man: George Hayslip
Area Served—Upper New York State

Amusement Supply Company
341 West 44th Street
New York, N. Y.
Personnel—*Owners:* Amusement Supply Co., Inc.
Manager: Joseph J. Pear
Manager Constr. Dept.: Sidney B. Moss
Salesmen: Jack Halpern, Joseph Malmuth, Harry E. Pear
Counter Man: O. Lightstone
Area Served—New York north to Syracuse, Long Island, Connecticut, N. Jersey to Trenton

Capitol Motion Picture Supply Corp.
630 Ninth Avenue
New York, N. Y.
Personnel—*Owners:* B. Perse, I. S. Perse, H. Perse
Manager: B. Perse
Salesman: V. Pallilo
Counter Man: S. Ochs
Area Served—Greater New York Film Territory and Albany Film Territory to Utica

Crown Motion Picture Supplies Corp.
346 West 44th Street
New York, N. Y.
Personnel—*Owners:* Katz Bros.
Manager: Harry Friedman
Salesman: W. J. Katz, S. H. Katz, H. Friedman
Counter Man: Anthony Gullotta
Area Served—Metropolitan New York and vicinity

Harding Theatre Supply Company
630 Ninth Avenue
New York, N. Y.
Personnel—No information
Area Served—No information

Joe Hornstein, Inc.
630 Ninth Avenue
New York, N. Y.
Personnel—*Owner:* Joe Hornstein
Manager: George Hornstein
Counter Men: Sol Shurkin, Milton Hornstein
Area Served—Eastern New York

National Theatre Supply Company
356 West 44th Street
New York, N. Y.
Personnel—*Manager:* James Frank, Jr.
Salesmen: B. Kleid, S. R. Kutonsky, T. Rosenberg
Counter Man: J. Ward
Area Served—New York north to Kingston; New Jersey south to Trenton

S. O. S. Cinema Supply Corp.
636 Eleventh Avenue
New York, N. Y.
Personnel—*Owner:* Jos. A. Tanney
Counter Man: Dominick Capano
Area Served—Mail Order Supply House—All over U. S.

Star Cinema Supply Company
440 West 45th Street
New York, N. Y.
Personnel—*Owner:* S. Tanney
Counter Man: N. Kay
Area Served—Mail order supply house—all over U. S.

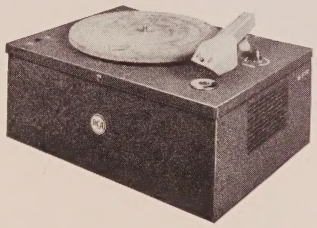
NORTH CAROLINA

Bryant Theatre Supply Company
227 South Church Street
Charlotte, N. Carolina
Personnel—*Owner:* Max W. Bryant
Counter Man: A. Manire
Area Served—N. Carolina, S. Carolina and Southern Virginia

THEATRE ACCESSORIES

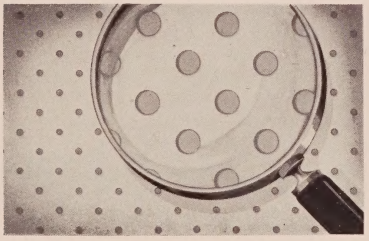
RCA Theatre Accessories include Speakers, Amplifiers, Microphones, Complete Sound Reinforcing Systems, Portable Sound Truck Equipment, RCA Telekom Intercommunicating Systems, Theatre Record Players and Soundscreens.

This Record Player uses a self-starting synchronous motor and rubber cushioned rim driven turntable to keep speed variations and vibration to a minimum. Shock-proof mounting of cabinet further reduces vibration. Adjustable height permits proper horizontal leveling. A high quality magnetic pickup permits uniform operation over wide variations in temperature and humidity. Tone balance comparable to reproduction from film is assured through special equalizing compensation in pickup circuit. This Instrument's output is easily maintained at the same level as that of the soundhead by means of a built-in volume control. Separate low and high impedance output terminals make it easy to match its output to various types of theatre sound amplifier input circuits.



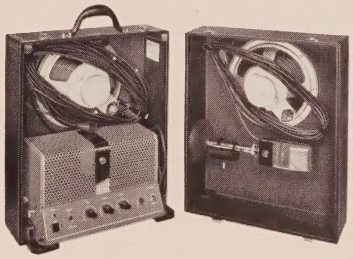
The RCA Theatre Record Player illustrated is Model MI-9730. It weighs 25 lbs., is 9″ high, 6-⅛″ wide, 2-¼″ deep. Is specially designed for theatre use. Comes in attractively finished cabinet—all-metal and *fireproof*, with full underwriters' approval.

RCA MAGIC SCREEN



The RCA Magic Screen is a brilliant new development, designed to give better picture and sound performance—at lower cost. With this screen you no longer need worry about screen discoloration . . . the expense of re-surfacing and loss of sound quality that so frequently follows. The new RCA Magic Screen is especially designed to overcome these ills. It enables you to provide your patrons with finer pictures and sound—at lower initial cost and greatly reduced upkeep. As picture above shows, the thinness of this screen assures perfect clean-cut perforations which greatly add to perfection of sound quality.

RCA PUBLIC ADDRESS SYSTEM



Many theatres throughout the country have discovered that an RCA Public Address System is a profitable investment. It is used for contest announcements, prize awards, amateur nights, and in many other ways. The RCA Portable Public Address System shown is Model PG-180 which is excellent for audiences of up to 2,000 persons. May be used indoors or out. Consists of an RCA 15-watt amplifier, RCA Junior Velocity Microphone with table stand and two large permanent magnet dynamic speakers.

SEE PAGE 217 FOR ADDRESS OF YOUR NEAREST RCA PHOTOPHONE REPRESENTATIVE

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VICTOR RECORDS
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RCA VICTROLA

Better sound means better box office—RCA Tubes mean better sound.

DIXIE THEATRE SUPPLY COMPANY
324 South Church Street, Box 217
Charlotte, N. Carolina
Personnel—*Owner:* J. B. Erskine
Area Served—N. Carolina and S. Carolina

NATIONAL THEATRE SUPPLY COMPANY
304 South Church Street
Charlotte, N. Carolina
Personnel—*Manager:* Howard Marx
Salesmen: W. G. Boling, D. F. Killmer, F. A. Adams
Area Served—N. Carolina and S. Carolina

WIL-KIN THEATRE SUPPLY, INC.
229 South Church Street
Charlotte, N. Carolina
Personnel—*Branch Manager:* Roy Malmborg
Salesman: W. P. White
Counter Man: Robert L. Bailes
Area Served—N. Carolina and S. Carolina

STANDARD THEATRE SUPPLY COMPANY
124 E. Washington Street
Greensboro, N. Carolina
Personnel—*Owner:* L. P. Wicker
Manager: Ralph Edwards
Salesman: Charles Duncan
Counter Man: Marion Beal
Area Served—N. Carolina, S. Carolina and Southern Virginia

NORTH DAKOTA

MCCARTY THEATRE SUPPLY COMPANY
Fargo, N. Dakota
Personnel—No information
Area Served—No information

OHIO

AKRON THEATRE SUPPLY COMPANY
1025 North Main Street
Akron, Ohio
Personnel—*Owner:* Harry P. Jones
Counter Man: Harry A. Roush
Area Served—Northern Ohio

MID-WEST THEATRE SUPPLY COMPANY, INC.
1632 Central Parkway
Cincinnati, Ohio
Personnel—*Owners:* J. Stallings, Pres.; J. N. Gelman, Sec'y-Treas.
Area Served—Ohio, Kentucky, W. Virginia (Cincinnati Film Territory)

NATIONAL THEATRE SUPPLY COMPANY
1637 Central Parkway
Cincinnati, Ohio
Personnel—*Manager:* Herman H. Hunt
Salesmen: B. N. Peterson, Hugh T. Gooding
Counter Man: Wm. Hitchcock
Area Served—Southern Ohio, Southern W. Virginia and Eastern Kentucky

NATIONAL THEATRE SUPPLY COMPANY
2128 Payne Avenue
Cleveland, Ohio
Personnel—*Manager:* L. H. Walters
Salesmen: F. J. Masek, J. R. Watts
Area Served—Northern Ohio

OLIVER SUPPLY COMPANY, INC.
23rd and Payne Street
Cleveland, Ohio
Personnel—*Owners:* Mr. and Mrs. L. P. Langford
Salesman: M. H. Fritchle
Counter Man: Tom Baird
Area Served—Northern Ohio (Cleveland Film Center)

AMERICAN SUPPLY COMPANY
165 North High Street
Columbus, Ohio
Personnel—No information
Area Served—No information

DAYTON THEATRE SUPPLY COMPANY
111 Volkenand Street
Dayton, Ohio
Personnel—*Owner:* Charles D. Wall
Salesmen: A. Hill, F. Braun
Area Served—Southern Ohio, Northern Kentucky

AMERICAN SUPPLY COMPANY
Toledo, Ohio
Personnel—No information
Area Served—No information

OKLAHOMA

W. R. HOWELL
12 South Walker Avenue
Oklahoma City, Oklahoma
Personnel—No information
Area Served—No information

NATIONAL THEATRE SUPPLY COMPANY
700 South Grand Avenue
Oklahoma City, Oklahoma
Personnel—*Manager:* J. I. Watkins
Salesmen: W. G. Wortham, B. A. Parks
Area Served—Oklahoma and Panhandle of Texas

OKLAHOMA THEATRE SUPPLY COMPANY
708 West Grand Avenue
Oklahoma City, Oklahoma
Personnel—*Owner:* J. Eldon Peek
Counter Man: Victor S. Cavener
Area Served—Oklahoma, Texas Panhandle and Western Arkansas

OREGON

PORTLAND MOTION PICTURE COMPANY
912 W. Burnside Street
Portland, Oregon
Personnel—No information
Area Served—No information

B. F. SHEARER COMPANY
1947 N. W. Kearney Street
Portland, Oregon
Personnel—*Manager:* Thomas L. Shearer
Area Served—Southern Washington, Oregon, Northern California and Southwestern Idaho

THEATRE UTILITIES SERVICE COMPANY
1935 N. W. Kearney Street
Portland, Oregon
Personnel—*Owner:* H. S. McLeod
Salesman: J. D. Fretland
Area Served—Oregon, Washington, Western Montana and Northern Idaho

WESTERN THEATRE EQUIPMENT COMPANY, INC.
1923 N. W. Kearney Street
Portland, Oregon
Personnel—*Manager:* F. J. Becker
Salesmen: A. G. Shuckart, Hal W. Boehme, S. A. Tully
Area Served—Oregon, Washington, Montana and Northern Idaho

PENNSYLVANIA

NATIONAL THEATRE SUPPLY COMPANY
1225 Vine Street
Philadelphia, Penna.
Personnel—*Manager:* H. Blumberg
Salesman: B. Blumberg
Counter Man: W. R. Aiken
Area Served—Eastern Pennsylvania, Delaware and Southern New Jersey

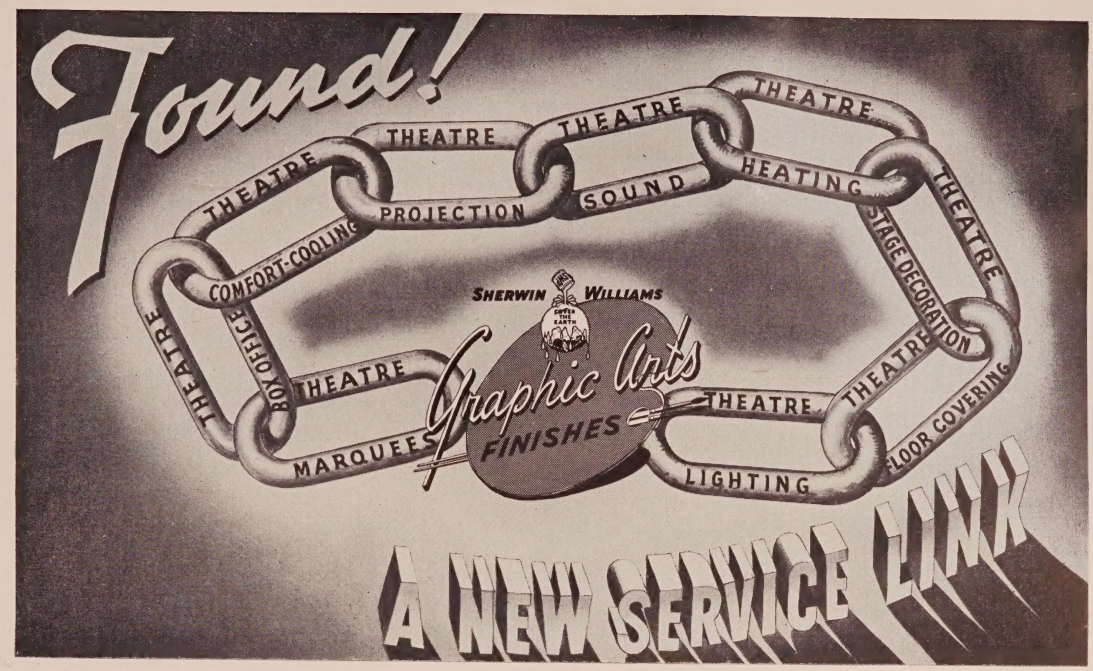
PENN THEATRE EQUIPMENT COMPANY
309 North 13th Street
Philadelphia, Penna.
Personnel—*Owners:* Charles Cohen and Al Rothberg
Manager: Edward Sacks
Salesmen: Joseph Haggerty, Don Becker
Counter Man: Herb Sadler
Area Served—Eastern Pennsylvania, Delaware and Southern New Jersey

NATIONAL THEATRE SUPPLY COMPANY
1721 Blvd. of the Allies
Pittsburgh, Penna.
Personnel—*Manager:* E. B. Morton
Salesmen: J. E. Currie, N. F. Williams, C. W. Smith
Counter Man: E. G. Saller, Jr.
Area Served—Western Pennsylvania

ALVIN SEILER
1711 Blvd. of the Allies
Pittsburgh, Penna.
Personnel—*Owner:* Alvin Seiler
Area Served—Western Pennsylvania and West Virginia

A. & S. STEINBERG, INC.
1705 Blvd. of the Allies
Pittsburgh, Penna.
Personel—*Owners:* A. & S. Steinberg
Area Served—Western Pennsylvania and West Virginia

SUPERIOR MOTION PICTURE SUPPLY COMPANY
86 VanBraan Street
Pittsburgh, Penna.
Personnel—No information
Area Served—No information



EVERYTHING YOU NEED—MATERIALS—TOOLS and EQUIPMENT FOR THE THEATRE SIGN and DISPLAY SHOP

In offering "the finest for your theatre," NATIONAL THEATRE SUPPLY takes great pleasure in announcing the availability of Sherwin-Williams Graphic Arts Colors and Finishes and Quali-Craft Display Advertising Materials—a new specialized service for your convenience. We invite you to take advantage of our facilities—which means one source of supply, plus the kind of service, speed and economy you require for streamlined operation.

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Acclaimed the most brilliant and attention-compelling Show Card Colors ever offered. They provide the artist, signwriter and display craftsman with colors having remarkably fine working characteristics. Ready to use, free flowing, non-bleeding and rapid drying to a soft matte finish. There are twenty-eight bright, vivid colors from which to choose. Write your nearest N. T. S. Branch for a free color card and full particulars.

S-W Deca-Sene Colors

An improved line of uniform, non-fading, casein type colors, developed especially for use on displays and background decorations. Can be brushed or sprayed with the greatest of ease, and dries solid in one hour. The brilliancy of these twelve attractive colors makes possible many unusual and striking effects in the theatre arts where color and eye appeal are of paramount performance. A color card is yours for the asking.

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RHODE ISLAND THEATRE SUPPLY
357 Westminster Street
Providence, R. I.
Personnel—No information
Area Served—No information

SOUTH DAKOTA

AMERICAN THEATRE SUPPLY COMPANY
220 West 10th Street
Sioux Falls, S. Dakota
Personnel—*Owner:* Jos. A. Bradley
Salesmen: A. E. Trotzig, P. W. Kelley, E. L. Straigl
Counter Men: A. Carroll, P. Kelley
Area Served—Southern Minnesota, Northern Iowa, N. Dakota and S. Dakota

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MONARCH THEATRE SUPPLY COMPANY
492 South 2nd Street
Memphis, Tennessee
Personnel—*Owners:* I. M. Cohen and Nate Bernstein
Salesman: E. N. Epley
Area Served—Tennessee, Arkansas and Mississippi

NATIONAL THEATRE SUPPLY COMPANY
400 South 2nd Street
Memphis, Tennessee
Personnel—*Manager:* R. L. Bostick
Salesmen: C. C. Bach, W. G. Milwain, O. D. Bland
Counter Men: M. V. Gelders, J. C. Grizzelle
Area Served—Arkansas, Tennessee west of Tennessee River and Northern Mississippi

TEXAS

HARDIN THEATRE SUPPLY COMPANY
714 Hampton Road
Dallas, Texas
Personnel—*Owner:* J. H. Hardin
Area Served—All over U. S.

HERBER BROTHERS
408 South Harwood Street
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Personnel—*Owners:* E. P. Herber and B. G. Herber
Salesmen: B. B. Moseley, S. E. Sale
Counter Man: Dan Hulse
Area Served—Texas

MODERN THEATRE EQUIPMENT COMPANY
2011 A Jackson Street
Dallas, Texas
Personnel—*Owner:* H. S. Sorenson
Manager: H. S. Sorenson
Area Served—Texas

NATIONAL THEATRE SUPPLY COMPANY
300 South Harwood Street
Dallas, Texas
Personnel—*Salesmen:* W. B. Hardin, A. G. Smith, L. B. Gottschall, Jr.
Counter Men: M. J. Konemann, W. P. Robertson
Area Served—Texas

SOUTHWESTERN THEATRE EQUIPMENT COMPANY
1416 Main Street
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Personnel—*Owners:* A. Mortensen, George Heck
Salesmen: Alex. McKenzie, Art Koch, J. W. Hill
Area Served—Texas, Southwestern Louisiana, New Mexico and Arizona

INDEPENDENT FILM EXCHANGE
352 E. Commerce Street
San Antonio, Texas
Personnel—*Owner:* R. W. Barron
Salesmen: Mrs. Grace Bennett, R. A. Barron
Counter Man: Charles Breuning
Area Served—Southwestern Texas

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INTER-MOUNTAIN THEATRE SUPPLY COMPANY
142 East First South Street
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Personnel—*Manager:* Philip S. Guss
Salesmen: Edward M. Wilson, C. D. Rowsell
Counter Man: Ralph Rogers
Area Served—Utah, Western Wyoming, Idaho, Montana and Eastern Nevada

NATIONAL THEATRE SUPPLY COMPANY
248 East First South Street
Salt Lake City, Utah
Personnel—*Manager:* R. P. Haase
Salesmen: G. Homan, Lee Scott
Area Served—Idaho, Utah and Montana

SERVICE THEATRE SUPPLY COMPANY
256 East First South Street
Salt Lake City, Utah
Personnel—No information
Area Served—Utah, Idaho, Central Montana, Eastern Nevada, Western Wyoming

VIRGINIA

ELMER H. BRIENT
209 North Jefferson Street
Richmond, Virginia
Personnel—*Owner:* Elmer H. Brient
Area Served—No information

VIRGINIA THEATRE SUPPLY COMPANY
16 South First Street
Richmond, Virginia
Personnel—No information
Area Served—No information

WASHINGTON

NATIONAL THEATRE SUPPLY COMPANY
2319 Second Avenue
Seattle, Washington
Personnel—*Manager:* Heaton Randall
Salesmen: E. C. Holland, Guil. Homan
Counter Man: S. L. Shultz
Area Served—Washington, Alaska, Oregon, Flathead and Lincoln Counties of Montana and Northern Idaho

B. F. SHEARER COMPANY
2318 Second Avenue
Seattle, Washington
Personnel—*Owner:* B. F. Shearer, Pres.
Manager: R. A. Brobeck
Sales Manager: R. C. Peacock
Area Served—Washington, Oregon, Alaska, Idaho, Montana

WESTERN THEATRE EQUIPMENT COMPANY
110 Wall Street
Seattle, Washington
Personnel—No information
Area Served—No information

B. F. SHEARER COMPANY
617 West First Avenue
Spokane, Washington
Personnel—*Manager:* E. R. Bechtel
Counter Man: A. T. Friel
Area Served—Eastern Washington, North and Central Idaho and Montana

WEST VIRGINIA

CHARLESTON THEATRE SUPPLY COMPANY
506 State Street
Charleston, West Virginia
Personnel—*Owner:* N. E. Merhie
Salesman: L. E. Little
Counter Man: Albert Merhie
Area Served—Southern W. Virginia, Southwestern Virginia, Northeastern Kentucky and Southeastern Ohio

TRI-STATE EQUIPMENT COMPANY
138—28th Street
Wheeling, W. Virginia
Personnel—*Owners:* C. W. Neuhardt & Son
Salesmen: C. W. Neuhardt, C. F. Neuhardt
Area Served—W. Virginia, Western Pennsylvania and extreme Eastern Ohio

WISCONSIN

NATIONAL THEATRE SUPPLY COMPANY
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Personnel—*Manager:* J. B. Schuyler
Office Manager: A. J. Larsen
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Area Served—Wisconsin and Upper Michigan

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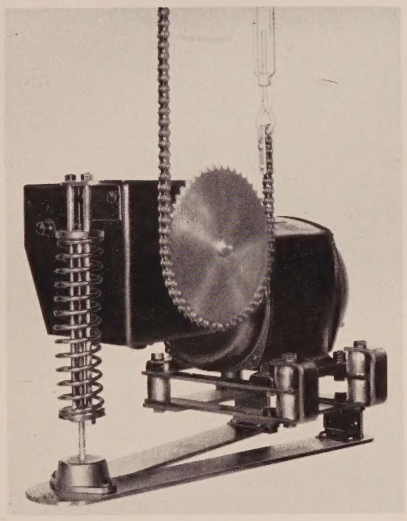
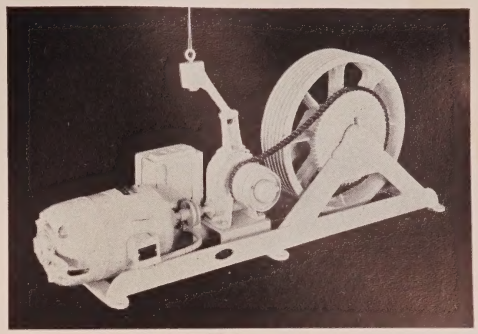


Model LD CURTAIN CONTROL—For light draw curtains; rubber insulated automatic take-up base; silent chain drive insuring positive timing. 1/4 H.P. motor is instantly reversible without stopping motor; furnished in 55, 105, 175, or 212 ft. per min. Weight 55 lbs. Floor space 17" x 9½".

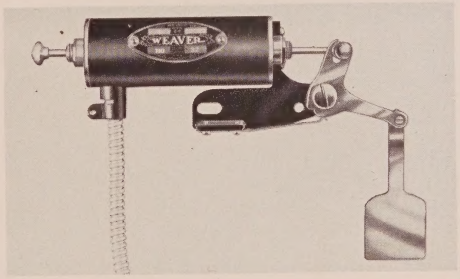
Changeovers
Foot Switches
Carbon Savers
Color Changers
Curtain Controls
Curtain Tracks
Fire Curtain Controls
Dash Pots
Spot Lamps
Automatic
Microphone Hoists
Circular Curtain Tracks
Magnascope Units
and
Theatrical Specialties



Model 3PB-1 FIRE CURTAIN CONTROL—Complete unit for operating asbestos curtains, with automatic clutch for releasing curtain in case of fire. Motor control and 20", 6-groove ball-bearing head block have common base, driven by a silent roller chain. Furnished in 45 to 65 ft. per min., with ½ H.P. 3-phase, 220 volt, 60 cycle motor, or any size or speed according to specifications. Length 48", width 13".

Model LT CURTAIN TRACK — Light duty curtain track, absolutely noiseless, all-steel construction, semi-resilient wheels, all sheaves ball-bearing, holes every six inches on rib of track for suspension mounting, width 2", height 3", distance from bottom of carrier chain to top of track, 8".

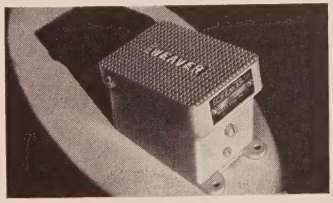
4½ x 3 DASH POT—Designed to stop asbestos or heavy straight lift curtains. Adjustable for any speed stop or weight curtain.



Model B DOUSER—Positive, quiet, easily installed compact electrical changeover for all types of projectors. **Model B for Standard or Super Simplex. Model E-7; Model SI; Model K; Model HM; Model HL for lamp houses with light cones.**

Jiffy Jaw Carbon Savers for Peerless Lamps
The only Carbon Saver with perfect alignment that will last a year or more with reasonable care. Made with built in guides to assure perfect alignment.

Model 100 FOOT SWITCH — With H&H 21585a momentary contact switch; for 2 or 3 machine installations; cast aluminum case; easily installed. 5½x3¾ x3⅛". Passed by National Board of Fire Underwriters.



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Counter Man: Jerome Kurz
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Engineers: J. McEwan, W. E. Carrick, J. E. Tagg
Area Served—Maritime Provinces—Nova Scotia, New Brunswick, Prince Edward Island and Newfoundland

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DOMINION SOUND EQUIPMENTS, LTD.
1620 Notre Dame Street West
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Gen. Manager: F. E. Peters
Gen. Sales Manager: Lloyd C. Pearson
Salesmen: D. M. Gervais, H. M. Holden
Area Served—Quebec and Eastern Ontario

GENERAL THEATRE SUPPLY COMPANY, LTD.
366 Mayor Street
Montreal, Canada
Personnel—*Distr. Manager:* H. Burko
Area Served—No information

PERKINS ELECTRIC COMPANY, LTD.
2027 Bleury Street
Montreal, Canada
Personnel—*Owner:* Mrs. G. F. Perkins
Manager: L. M. Bleackley
Counter Man: J. A. Paquette
Area Served—Quebec, Maritime Provinces, Eastern Ontario and Prairie Provinces

ST. JOHNS

CHARLES HUTTON & SONS
222 Water Street
St. John's, Newfoundland, Canada
Personnel—No information
Area Served—No information

TORONTO

CANADIAN SOUND EQUIPMENT COMPANY
2957 Bloor Street West
Toronto, Ontario, Canada
Personnel—*Owner:* W. Evan Jones
Salesman: Jack Hart
Counter Man: M. MacDonald
Area Served—Toronto and Territory

COLEMAN ELECTRIC COMPANY
258 Victoria Street
Toronto, Canada
Personnel—*Owner:* J. H. Coleman
Area Served—All of Canada

DOMINION SOUND EQUIPMENTS, LTD.
287 Victoria Street
Toronto, Canada
Personnel—*Distr. Manager:* E. Thomson
Service Manager: H. Goldin
Salesman: J. D. McCulloch
Area Served—Ontario

GENERAL THEATRE SUPPLY COMPANY, LTD.
104 Bond Street
Toronto, Canada
Personnel—*Gen. Manager:* R. B. Burko
Manager: P. D. Brown
Area Served—Ontario and Western Canada

PERKINS ELECTRIC COMPANY, LTD.
277 Victoria Street
Toronto, Canada
Personnel—*Manager:* L. F. Hoffman
Salesmen: R. V. Shale, Wm. Walterhouse
Counter Man: J. Wallace
Area Served—Central and Western Canada

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DOMINION SOUND EQUIPMENTS, LTD.
820 Cambie Street
Vancouver, Canada
Personnel—*Distr. Manager:* L. G. Sigurdson
Engineers: W. F. Graham, A. Jackson, J. E. F. Graham
Area Served—Alberta, British Columbia and Vancouver Island

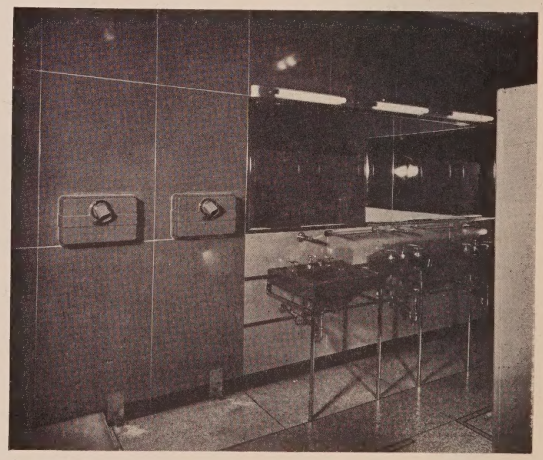
THEATRE EQUIPMENT SUPPLY COMPANY
906 Davie Street
Vancouver, B. C., Canada
Personnel—*Owner:* H. I. Howard
Salesman: I. Baxter
Counter Man: J. Dibben
Area Served—British Columbia, Alberta and Yukon Territory

WINNIPEG

CANADIAN THEATRE SUPPLY COMPANY, LTD.
510 Canada Building
Winnipeg, Man., Canada
Personnel—*Owner:* V. Armand
Asst. Manager: H. Ferman
Area Served—Western Canada from Great Lakes to Coast

DOMINION SOUND EQUIPMENTS, LTD.
65 Rorie Street
Winnipeg, Canada
Personnel—*Distr. Manager:* A. T. McCormick
Salesmen: D. E. Daniels, H. B. Grimes
Area Served—Western Ontario, Manitoba and Saskatchewan

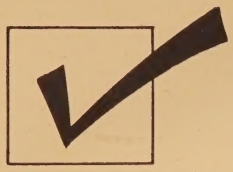
J. M. RICE COMPANY
202 Canada Building
Winnipeg, Canada
Personnel—*Owner:* J. M. Rice
Salesmen: J. L. Rice, Chas. Carphin, H. E. Kinnear
Area Served—Western Canada



TO PROMOTE CLEANLINESS in the toilet rooms, the mechanical hand dryer is receiving wide acceptance. Considerably improved over the old dryer originally presented to theatres and other places of public assemblage, the current models are claimed to thoroughly dry a pair of wet hands in approximately 30 seconds. The Sani-Dri installation here illustrated is representative of the method employed. Units come in both built-in and pedestal types.

A SERVICE TO YOU that we are glad to render! TRY IT!

MAY WE BE OF HELP?



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- ☐ Acoustical Materials
- ☐ Acoustical Service
- ☐ Admission Signs
- ☐ Air Conditioning System
- ☐ Air Conditioning Blowers
- ☐ Air Conditioning Distributors
- ☐ Air Conditioning Filters
- ☐ Amplifiers
- ☐ Amplifier Tubes
- ☐ Architect

- ☐ Batteries
- ☐ Bookkeeping System
- ☐ Booth Supplies
- ☐ Boxoffice
- ☐ Boxoffice Equipment
- ☐ Business Boosters
- ☐ Bathroom Accessories
- ☐ Building Materials
- ☐ Building Service

- ☐ Cabinets
- ☐ Cans
- ☐ Carbon Adapters
- ☐ Carbons
- ☐ Carpets
- ☐ Chair Accessories
- ☐ Chairs
- ☐ Changeable Letters
- ☐ Changeovers
- ☐ Coin Changers
- ☐ Color Wheels
- ☐ Condensers
- ☐ Converters
- ☐ Curtains
- ☐ Curtain Controls
- ☐ Curtain Track
- ☐ Cycloramas

- ☐ Decoration
- ☐ Deodorants
- ☐ Desks
- ☐ Dimmers
- ☐ Door Hardware
- ☐ Draperies
- ☐ Drapery Materials
- ☐ Drinking Cups
- ☐ Drinking Fountains

- ☐ Effect Machine
- ☐ Exit Signs

- ☐ Fans
- ☐ Film Cases
- ☐ Fire Extinguishers
- ☐ Fire Hose
- ☐ Fire Shutters
- ☐ Flashlights
- ☐ Fluorescent Paint
- ☐ Floodlights

- ☐ Floor Lamps
- ☐ Flooring Materials
- ☐ Fluorescent Lighting
- ☐ Footlights
- ☐ Frames
- ☐ Front Re-building
- ☐ Furniture
- ☐ Flooring

- ☐ Generators
- ☐ Glass Sign Letters
- ☐ Glass Brick

- ☐ Hand Rails
- ☐ Hand Dryers
- ☐ Hardware
- ☐ Hearing Aids
- ☐ Heating Equipment
- ☐ Heating Systems

- ☐ Interior Remodeling
- ☐ Interior Redecorating
- ☐ Insulation

- ☐ Janitor Supplies

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- ☐ Linoleum
- ☐ Ladders
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- ☐ Lobby Frames
- ☐ Lobby Hardware
- ☐ Lobby Redecorating
- ☐ Lobby and Lounge Furniture

- ☐ Marquee
- ☐ Mirrors
- ☐ Murals

- ☐ Outdoor Signs
- ☐ Ozite Carpet Padding

- ☐ Paints
- ☐ Painting
- ☐ Panel Board
- ☐ Pedestals
- ☐ Photo Electric Cells
- ☐ Popcorn Machines
- ☐ Porcelain Enamel Front
- ☐ Poster Frames
- ☐ Premiums
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- ☐ Projection Lamps
- ☐ Projectors

- ☐ Rectifiers
- ☐ Rectifying Tubes
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- ☐ Rubber Mats

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- ☐ Screen
- ☐ Seats
- ☐ Showcard Paints
- ☐ Sign Flashers
- ☐ Sign Letters
- ☐ Signs
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- ☐ Sound Equipment
- ☐ Sound Service
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- ☐ Spotlights
- ☐ Stage Draperies
- ☐ Stage Hardware
- ☐ Stage Lighting
- ☐ Stage Rigging
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- ☐ Standee Posts
- ☐ Stereopticons
- ☐ Switchboard
- ☐ Structural Glass

- ☐ Theatre Hardware
- ☐ Theatre Games
- ☐ Theatre Premiums
- ☐ Ticket Booths
- ☐ Ticket Chopper
- ☐ Tickets

- ☐ Uniforms
- ☐ Upholstering Materials

- ☐ Vacuum Cleaners
- ☐ Vending Machines
- ☐ Ventilating

- ☐ Wall Covering
- ☐ Wind Breaks
- ☐ Work Lights
- ☐ Water Proofing

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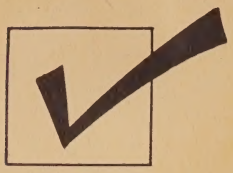

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- ☐ Changeable Letters
- ☐ Changeovers
- ☐ Coin Changers
- ☐ Color Wheels
- ☐ Condensers
- ☐ Converters
- ☐ Curtains
- ☐ Curtain Controls
- ☐ Curtain Track
- ☐ Cycloramas

- ☐ Decoration
- ☐ Deodorants
- ☐ Desks
- ☐ Dimmers
- ☐ Door Hardware
- ☐ Draperies
- ☐ Drapery Materials
- ☐ Drinking Cups
- ☐ Drinking Fountains

- ☐ Effect Machine
- ☐ Exit Signs

- ☐ Fans
- ☐ Film Cases
- ☐ Fire Extinguishers
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- ☐ Interior Redecorating
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- ☐ Tickets

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- ☐ .....
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Without any cost or other obligation to me, I desire further data on the items checked above, for which I am in the market or considering.

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A SERVICE TO YOU that we are glad to render! TRY IT!

Air Conditioning and Cooling

A Doctor Lists the Cooling "Don'ts"

The Editor of the Journal of the American Dental Association and Hygeia, the Health Magazine, has specially written his views on current theatre air conditioning.

BY DR. MORRIS FISHBEIN

FEW inventions seem to promise more for the comfort and happiness of mankind than those developed for air conditioning. Air is the first need of mankind for life. Control of the air as to its temperature and moisture can provide greater comfort and greater health for human beings. Engineers have invented and manufactured the necessary devices for controlling the temperature and moisture of the air in individual rooms, in great buildings, in theatres, in factories, in trains, and in other conveyances.

WHAT we need to know, however, is whether or not human beings are less healthful or more healthful when they live in air conditioned rooms, and whether or not the human being is harmed in any way by changing from high temperatures to low temperatures, from high humidity to low humidity or vice versa. When a lot of people get into a room they alter the air in that room. Part of the alteration takes place from the fact that they breathe in air and breathe out carbon dioxide and other materials. The air is also modified by the fact that the human or the body of any living animal is constantly decomposing and giving off materials. Finally, the clothing worn by human beings in a room may affect the air in the room.

CONTRARY to living quarters, where the leakage of air through cracks around windows and doors is usually sufficient to maintain enough oxygen in a room for the people who occupy it, places of public assemblage must introduce fresh air in proportion to the number of people assembled. Therefore—

RULE 1—Don't depend on "used" or reconditioned air! Heat or cool air to make it comfortable, because "new" fresh air is preferable.

Most important from the point of view of comfort is the material that comes from breath, sweat, and the secretions of the body, gases from the intestines and stomach, and similar materials. When people are especially sensitive to body odors, they may have headache or nausea on coming into a stuffy room. Every room ought to have enough fresh air at all times to prevent the accumulation of objectionable body odors.

THE most important change in the air of an occupied and well ventilated room is an increase in the temperature and humidity caused by the heat and moisture given off from the skin and lungs of the people in the room. The chief purpose of air conditioning is to lower the temperature and the humidity to points at which human beings are comfortable.

This brings us to:—

RULE 2—DON'T shock your patrons with a temperature and humidity which their bodies cannot stand. Comfort is a relative and constantly changing quality. Regardless of the capacity of your equipment or how much you wish to boast about it, restrain your desires and just give them comfort.

We are comfortable when the air conditions in a room are such that the human body can maintain a normal balance between the production and loss of heat without our being conscious of the fact that we are having any trouble maintaining this balance. In order to be comfortable, as far as the air is concerned, there must be a suitable humidity and temperature, enough radiation of heat from the body, and enough movement of the air.

Our experience with air conditioning in large buildings has been too short to permit making any definite conclusions. We do know already, however, that temperature must not be great. Apparently it is desirable to keep the temperature between 75 and 80 degrees Fahrenheit in buildings, with a relative humidity of from 40 to 55 per cent.

In theatres and restaurants where the occupants remain an hour or two before going out to the summer air again, it is customary to keep the air in the room from two to 15 degrees Fahrenheit below the prevailing outdoor temperature. Of course, people feel the difference at once passing from one temperature to the other, but apparently, our bodies are able to adjust themselves to such variations.

THE chief complaint against air conditioning is over-cooling. This seems to result either from faulty control of the apparatus or sometimes it is done deliberately as a means of advertising the system. Unquestionably, cooling of the air in hot weather contributes to the comfort and efficiency of human beings and may be of great importance in the control of certain diseases.

The problems of air conditioning in summer are, of course, much more frequent than those of air conditioning in winter. If we reproduce winter conditions on a warm summer day, we would find them uncomfortably cold. In the summer, we adapt ourselves to higher temperatures, we wear less and much lighter clothing, and we want our temperatures warmer than we want them in winter. Anyone who has traveled on modern trains knows that quite frequently air conditioning devices in dining cars and in pullmans make the air so cold that distinct discomfort results. In warm weather, a comfortable temperature is usually 10 to 20 degrees higher than in cold weather.

THE problem of cooling for comfort in warm weather is much more difficult than heating in winter. It raises not only the question of variations in the rates of metabolism and the sweating of various human beings, but also the possible dangers to the human body of chilling the skin when we are warm and perspiring.

Therefore, our third advice:—

RULE 3—DON'T trust to your own feelings. Not only provide accurate, scientific, regulating devices but depend completely on their results.

An air condition that is comfortable to people with dry skin and clothing may be far too cold for those who are perspiring. The employees in a motion picture theatre may be quite comfortable under circumstances which are distinctly uncomfortable for the patrons of that same theatre. This is due to the fact that the employees are there all the time whereas the patrons merely come in, stay a short time, and go out. Experiments also seem to show that sudden changes in the temperature in the winter have little or no effect on healthy people who are suitably dressed. In summer, however, we are much more sensitive to temperature

Dr. Morris Fishbein, editor of the Journal of the American Medical Association, and of Hygeia, the Health Magazine, was born in St. Louis on July 22, 1889. He received his B.Sc. degree from the University of Chicago in 1910, and his M.D. degree from Rush Medical College in 1912. He conducts a newspaper health column syndicated by King Features, Inc. Dr. Fishbein's literary activities also include contributions to the Saturday Evening Post, Good Housekeeping, The Reader's Digest, Look, the Encyclopedia Britannica, and the Whittlesey House Health Series. He is editor of the bulletin of the Society of Medical History of Chicago; member of the American Public Health Association, Chicago Pathological Society, Institute of Medicine, American Association for the Advancement of Science, Standard Club, Tavern Club, Chicago Literary Club, National Press Club, Quadrangle Club; and a Fellow of the American Medical Association. He is also associate clinical professor of medicine, University of Chicago; lecturer, history of medicine, University of Illinois' School of Medicine; member of the Council on Pharmacy and Chemistry, the Council on Physical Therapy, the Council on Scientific Assembly, the Board of Trustees of the US Pharmacopoeial Convention; and chairman of the Council on Foods of the American Medical Association. Dr. Fishbein also has the writing and editing of several books to his credit.

changes, probably because the body surfaces in summer are covered with perspiration. In experiments carried out on animals, investigators proved that animals which were adapted for a few weeks to summer heat were able to endure safely degrees of excessive heat which in a few hours produced prostration and even death in animals which had been adapted to cooler conditions.

When these animals were subjected to sudden chillings, they could not quickly increase their heat production; the body temperature fell and the animals were prostrated. Investigators of these reactions in human beings have found that human beings subjected to chilling and drafts and to sudden changes in temperature developed colds and sore thoat in the summertime, but did not develop these troubles in the wintertime.

FOR many years there has been a common belief that drafts are unhealthful, particularly drafts on the feet, back of the neck, and the top of the head. The feet are most sensitive to drafts because they probably have poorer circulation of blood than any other portion of the body.

There are conditions of the nervous system associated with inability to function and temporary paralysis which may result from the constant draft of cold air over the area of the body controlled by these nerves.

Which brings us to our final bit of advice:—

RULE 4—DON'T neglect the proper distribution of your conditioned air. Just introducing it into the room in one spot and withdrawing it from another is not the final conclusion. Carefully planned distribution without drafts or "cold spots" is a prime necessity.

CONCLUSION:—Without a doubt, the theatres, retail stores and other businesses serving the public are contributing mightily to its comfort through air conditioning and summer cooling. However, they often contribute a disservice and actually harm the public health through overzealousness in boasting of their equipment's capacity, or underzealousness in not providing proper engineering and control devices. The medical profession is watching the results of modern air conditioning, and as time and experience develop actual findings, will co-operate with the air conditioning industry by proposing modifications or improvements. In the meantime, the four restrictions summarized above are of proven importance.

The Air Side of Theatre Conditioning

Selling no "brand name" equipment, this leading expert discusses objectives and methods of accomplishing them.

BY CHARLES S. LEOPOLD

THE general purpose of theatre conditioning is to provide an atmosphere in which patrons may view a performance without having their attention diverted by bodily discomfort.

DISCOMFORT is an active sensation, comfort is relatively passive. Comfort may be considered as the end result of eliminating from our surroundings factors which produce discomfort. Physiological factors involved in the elimination of discomfort, due to excessive heat and humidity, by summer air conditioning, have all the complexity of other problems bearing upon the body, but the combined effect of heat, moisture, and air motion, in producing discomfort, has been subject to definite tests so that we can determine with considerable accuracy the percentage of people who will be uncomfortable at any given condition of temperature and moisture.

By removing excess heat or by making up heating deficiency, by removing excess moisture or by making up moisture deficiency, by preventing stagnation thru the production of suitable air currents, all in proper relation, one to the other, we relieve discomfort evidenced by our sense of heat and cold. By correcting relative humidities that have an adverse effect on organic materials, such as fabrics, leather, and paper, with which we are in contact, we eliminate discomforts from our sense of touch. By establishing means of air distribution of which we are reasonably unaware, and by the elimination of visible dust, we try to satisfy our sense of sight. We attempt to alleviate auditory discomfort by the exclusion of outside sound and by using apparatus which will, of itself, not create objectionable noise. By the introduction of outdoor air and the treatment of indoor air we reduce objectionable odors and thus minimize discomfort to our sense of smell and taste.

FROM the foregoing, it would be reasonable to expect that in a space properly air conditioned, the occupant would be oblivious to atmospheric conditions. Such is the case when a person is in this space for an appreciable length of time. Entering or leaving conditioned spaces presents a different problem, however.

Where an attempt is made to make comfort an active sensation, the result is unsatisfactory. I refer, for example, to the theatre operator who, in his desire to impress the public with the fact that his house is air conditioned, attempts to operate at a temperature at which he feels cool. Since the patrons of the theatre are presumably interested in the show, they should be oblivious of their environment. To be conscious of coolness would be discomfort.

Inside-Outside Relation—If Any

Much has been said and comparatively little demonstrated on the so-called "entrance shock", a term used to describe the sensation of coolness, whether pleasant or unpleasant, noted for a short time after entering an air conditioned theatre. It is obvious that successful air conditioning must produce an atmosphere at which the occupants do not perspire. It is found that the degree of this so-called "shock" does not vary appreciably, as the indoor condition is varied from the perspiration limit downward to the optimum conditions, so that unless we are willing to have occupants perspire, we can arrange for no effective relationship between inside and outside effective temperatures. As far as I know, no experiments to date have demonstrated harm occasioned by this sudden change in temperature sensation. Plausibility is not sufficient for, to be consistent, we would have to "view with alarm" the "shock" of a 75° shower-bath.

In winter, lower effective temperatures are desirable. This shift is apparently caused by clothing and certain physiological changes in the body. Experiments indicate that these adjustments require considerable time, so that if any shift of the desirable temperature can be made during an extended summer period, it can only be made on the long average of preceding weather and not on day-to-day change. In the meantime, the operating problem is simplified because we can maintain the proper indoor conditions without helping or hindering the entrance experience; and design problems are simplified because complicated controls regulating the relationship between indoor and outdoor temperature are rendered commercially unnecessary.

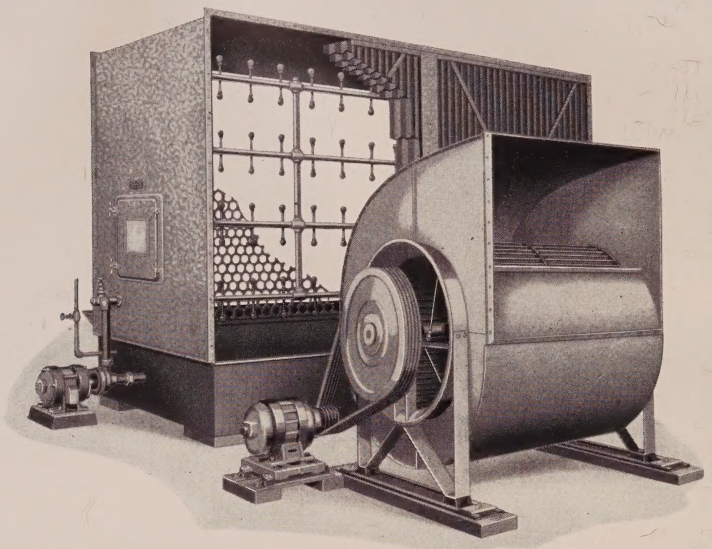
Operating Conditions

Fortunately, excellent data* are available on the relation of discomfort to the various atmospheric conditions. These data have

(*Continued on page* 320)

Air-conditioning engineer Charles S. Leopold is a graduate of Philadelphia's Central High School and the University of Pennsylvania, where he was a member of Sigma Xi and Eta Kappa Nu. He has been the engineer for air conditioning design for numerous theatres, department stores, and office buildings throughout the country. Among his better known achievements are the Palmer House, Chicago; U. S. Capitol and Old House Office Building, Washington; and House and Senate Chambers, State Capitol, Harrisburg, Pa.

Comfort Cooling Equipment



SELECTION CHART

FAN—CLASS I THEATRE AIR WASHER—SPRAY PUMP AND MOTOR COMBINATIONS

SYSTEM	FAN DATA							AIR WASHER DATA			SPRAY SYSTEM AND PUMP DATA									
						Motor					For Lowering the Dry Bulb Temperature of the Entering Air 60% of the (†) Wet Bulb Depression.					For Lowering the Dry Bulb Temperature of the Entering Air 70% of the (†) Wet Bulb Depression.				
C.F.M.	Fan Size	O.V.	* R.P.	RPM	BHP	HP	RPM	Size Washer Class I	Number of Nozzles	Free Area Sq. Ft.	G.P.M.	Head in Feet	Size Pump	Pump RPM	Pump Motor	G.P.M.	Head in Feet	Pump Size	Pump RPM	Pump Motor
11000	100	2000	.44	348	1.93	3	1750	101	60	35.75	60	40	1½x1½	1740	1½	70	45	1½x1½	1740	1½
17000	101	2000	.62	309	3.56	5	1750	101	60	35.75	65	45	1½x1½	1740	1½	75	55	1½x1½	1740	1½
20000	105	1370	.75	235	4.02	5	1150	101	60	35.75	70	50	1½x1½	1740	2	84	65	2x2	1740	2
25000	105	1715	.51	209	4.20	5	1150	105 A or B	96	62.4	96	40	2x2	1740	2	112	45	2x2	1740	3
30000	105	2050	.62	234	6.60	7½	1150	105 A or B	96	62.4	104	45	2x2	1740	2	130	60	2x2	1740	3
35000	108	1600	.76	195	7.20	7½	1150	105 A or B	96	62.4	110	50	2x2	1740	3	138	70	2½x2	1740	5
40000	108	1830	.55	178	7.40	7½	1150	108	144	93.5	150	45	2x2	1740	3	175	60	2½x2	1740	5
45000	108	2060	.62	194	9.82	10	1150	108	144	93.5	162	50	2x2	1740	3	202	70	3x2½	1740	7½
50000	108	2290	.71	211	12.82	15	1150	108	144	93.5	175	60	2½x2	1740	5	223	80	3x2½	1740	7½

From P. 2—Bulletin A23029. Supplement to P. 16—Bulletin A22029.

C.F.M.—Cubic feet of air per minute.

O.V.—Outlet velocity at fan discharge in feet per minute.

(*) **R.P.**—Resistance pressure in inches of water gauge. (Includes ¼ inch water gauge over requirements for overcoming duct and other resistance.)

R.P.M.—Revolutions per minute.

B.H.P.—Brake horsepower.

G.P.M.—Gallons of water per minute.

Head in Feet—Pressure against which pump operates when handling the required capacity of water.

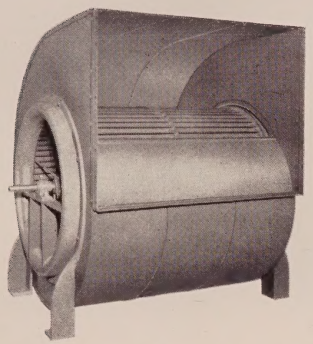
(†) **Wet Bulb Depression**—is the difference in degrees (F.) between the dry bulb temperature and the wet bulb temperature of the air. In most localities, it is desirable to select the pump and motor for lowering the dry bulb temperature of the entering air 60% of the wet bulb depression, to provide the most comfortable conditions in the theatre without over-humidification.

In climates such as encountered at Denver, Colorado, where the humidity is ordinarily low, the pump and motor can be advantageously selected for lowering the temperature of the entering air 70% of the wet bulb depression.

Write for Bulletin A-22029 for Complete Details.

NATIONAL THEATRE SUPPLY COMPANY—*All Branches*

Theatre Fans and Air Washers



THEATRE FANS

1. Designed and built especially for theatres by the world's foremost manufacturer of cooling, heating, ventilating, conditioning and allied equipment.

2. Ratings are certified and are in accordance with the standard test code for centrifugal and propeller fans adopted jointly by the N.A.F.M. and A.S.H. & V.E.

3. Operates at a lower speed for a given capacity than any other type of fan.

4. For a given speed it delivers more air per revolution than any other type fan.

5. It is economical in power consumption, quiet in operation, smooth in performance, durable, and occupies a minimum amount of space.

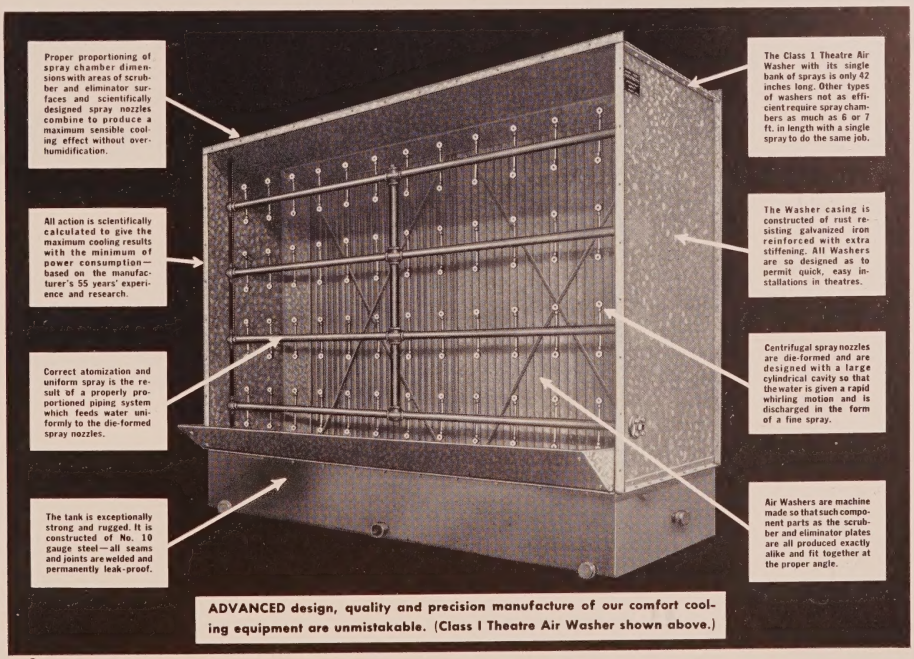
6. THE NATIONAL THEATRE SUPPLY FAN is rugged and strong but light in over-all weight.

THREE WAYS TO COMFORT

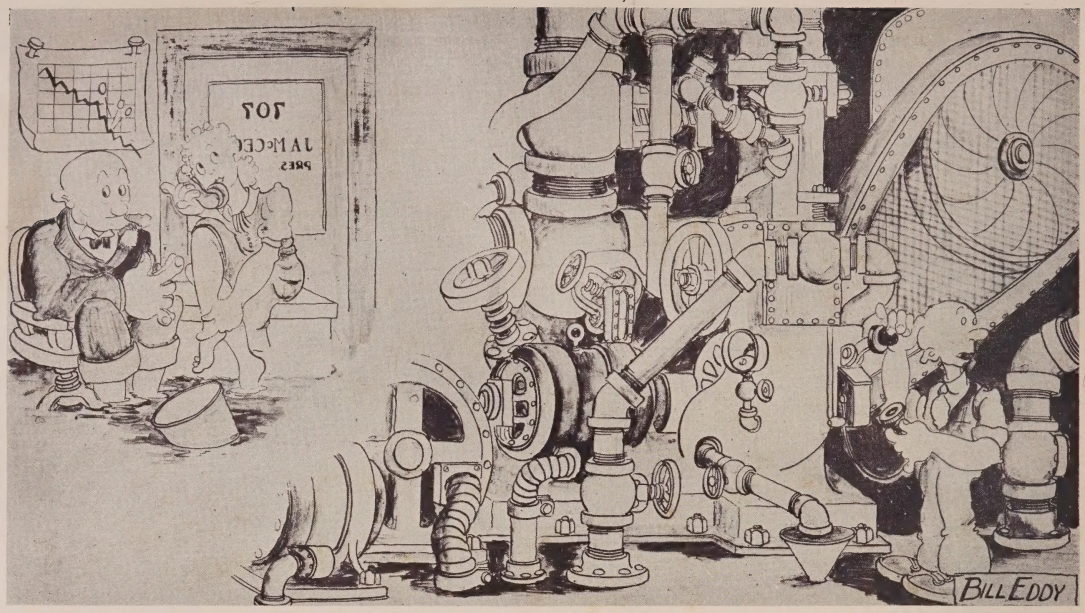
1 AIR IN MOTION—For the refreshing, cooling effect of an ample, circulating supply of fresh, outdoor air, NATIONAL THEATRE SUPPLY FANS are the first step in comfort cooling. They are designed and built especially for theatres . . . smooth and quiet in performance, durable, compact, and capable of moving tremendous quantities of air, year in and year out.

2 WASHED AIR—NATIONAL THEATRE SUPPLY CLASS I AIR WASHERS cleanse, purify and freshen the air, remove bacteria-laden dust and water-soluble odors, and have a remarkable cooling effect (by evaporative cooling). Air is brought into intimate contact with water, then sweeps through the theatre like the fresh breeze that follows a rain. Additional cooling effect is provided when cold "well water" is used. (See cooling by "chilled" air, below.)

3 "CHILLED" AIR—NATIONAL THEATRE SUPPLY CLASS II AIR WASHERS (Dehumidifiers) give remarkable Comfort-Cooling effect when "well water" 55° F. or colder is available. Utilizes the cooling effect of the cold "well water," and also washes water-soluble dust and odors from the air. Used with your present or new National Theatre Supply Fan, the Class II Washer provides tremendous quantities of clean, moving, "chilled," nature conditioned air. If you have "cold water" in limited quantities, it can be used in combination with recirculated city water, either with the Class II Washer of Class I Washer.



ADVANCED design, quality and precision manufacture of our comfort cooling equipment are unmistakable. (Class I Theatre Air Washer shown above.)



"CHARLIE! THEY'RE COMPLAINING ABOUT THE HUMIDITY IN ROOM 707!"

(Cartoon courtesy of Brown Instrument Co.)

(Continued from page 317)

been carefully compiled by various scientific groups and may be considered a reliable basis for predicting results, provided due weight is given to those factors of an actual installation which differ from the test conditions.

In general, the factors to be considered are:

1. Length of time people are in the conditioned space.
2. Degree of rest of the individual.
3. Air motion.
4. Temperature of the surrounding surfaces.
5. Relative humidity.
6. Temperature.

If four of the above factors are maintained constant, it is known that in a theatre temperature and humidity vary in a definite relationship in order to produce the sensations of warmth or coolness. Thus, a temperature of 72° and 80% relative humidity feels substantially as warm or as cool as the temperature of 77° and 34% relative humidity.

Referring to the above factors:

1. Since the average show is over two hours, the length of time people are in the conditioned space does not appreciably affect the conditions which should be maintained since the average person becomes acclimated within a period of 15 minutes.

2. Ushers and managers are usually in motion. Patrons are at rest. Lower temperatures are required for equivalent comfort when people are in motion. Theatre managers should, therefore, depend on instruments for determining temperature and humidity and not on their own feeling, as the conditioning system should be run to please the patrons.

3. Air must be in motion in order to pick up the heat and moisture given off by the people. This motion must be uniform and must not exceed certain well-known limits. A draft (another name for objectionable air motion), whether cold air or air at room temperature can produce a chilling effect equivalent to a large drop in temperature; and although opinion may differ slightly as to desirable temperature and humidity conditions, there can be no dispute as to the necessity of the elimination of drafts.

4. When people are standing or seated close together, the movement of the air is somewhat impeded and, in addition, people are exposed to the warmth of their neighbors' bodies, frequently even by contact. To be strictly accurate, the theatre should be run at a lower temperature under capacity crowd than when it is sparsely occupied. The economics are, however, against it; first; because of complication of controls but, more important still, the fact that in order to reduce costs of air conditioning systems great advantage is taken of the heat storage capacity of the structure. For both of these reasons, it is customary to allow a rise in temperature rather than a fall as occupancy increases. It does, however, indicate one more danger in establishing an economic compromise between the true capacity of the system required and the pocketbook.

5. In summer comfort conditioning, it is desirable that relative humidities do not exceed 55 percent; but, again, the economics are against this design, and tho it is possible to plan a theatre with lower relative humidities, humidities in excess of 55 percent are the rule, and many satisfactory jobs are closer to 60 per cent during peak occupancy. This, however, has an adverse result on odor as it is found that humidities above 55 per cent promote odors which extremely large quantities of fresh air do not eliminate. In a well designed system, lower relative humidities can be carried at less than peak occupancy on warm days, and this problem of odors minimized by the cleansing action during the off-peak occupancy operation.

6. Considering the foregoing, it will be found that satisfactory results can be economically obtained in the theatre in summer at temperatures from 74° to 78°. In winter, both relative humidity and bodily requirements are considerably lower and temperatures of 70° to 74° are satisfactory.

How Much Air?

In the design of air distribution, the air may be considered as a vehicle for the removal or addition of heat and moisture. The temperature at which it will be necessary to deliver air for peak load will depend on the total amount of air introduced per occupant and will approximate the following table, in which the maximum and minimum temperatures are determined by the type of occupancy and other heat gains of the structure:

(Continued on Page 325)

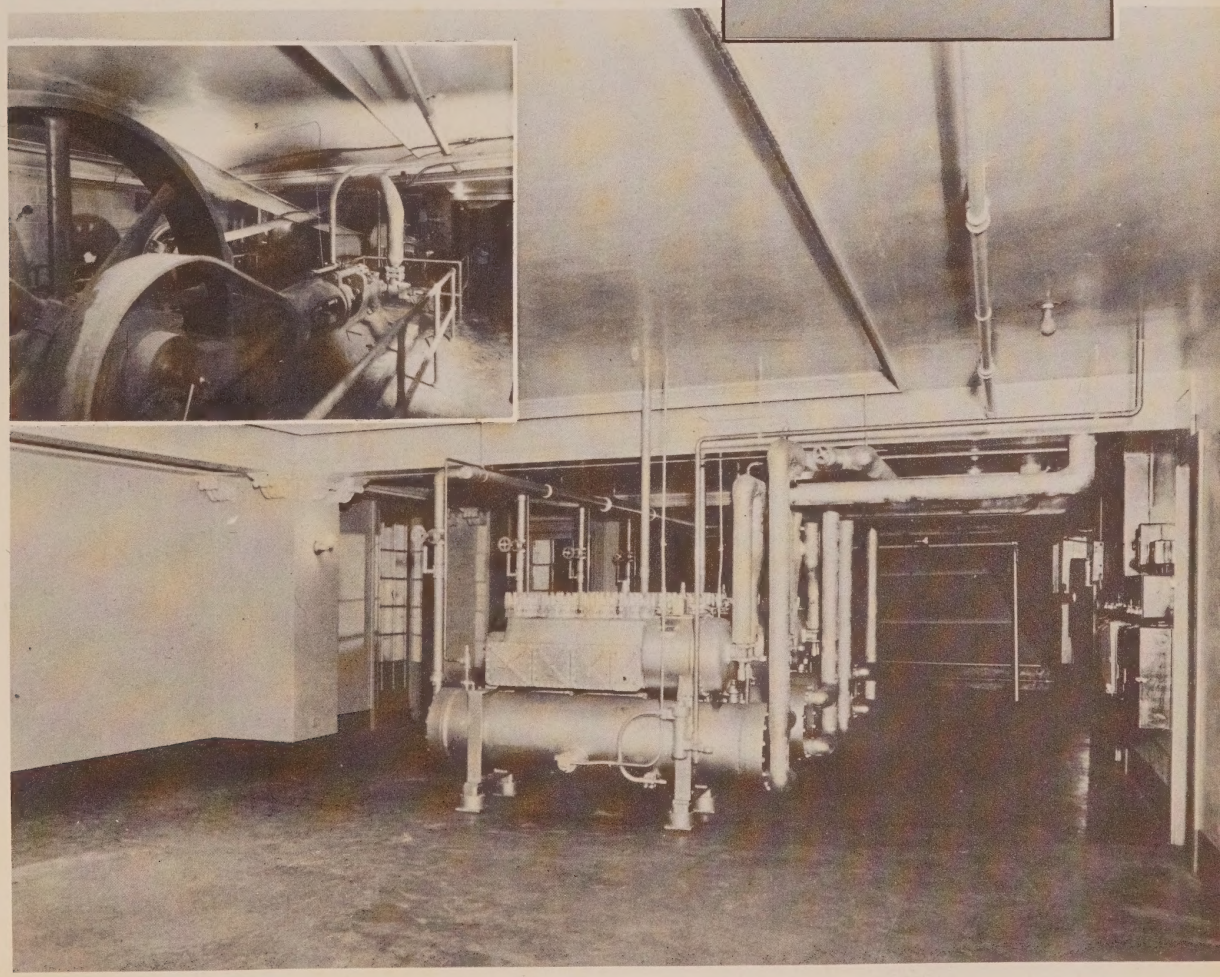
Formerly an exploitable novelty in only the big "deluxers" in the larger cities, Air Conditioning and Comfort Cooling has demonstrated its ability to draw patronage and tend to equalize summer and winter business. The theatre industry has lead all other businesses that cater to public tastes in accepting each new patron service so that there are few new theatres constructed today that fail to make some provision for it. Older theatres that are approaching the reconstruction or remodeling stage should give careful consideration to the many types and systems available. Some form of Air Conditioning and Comfort Cooling is as necessary to the modern theatre as a carpeted lounge or upholstered chairs.

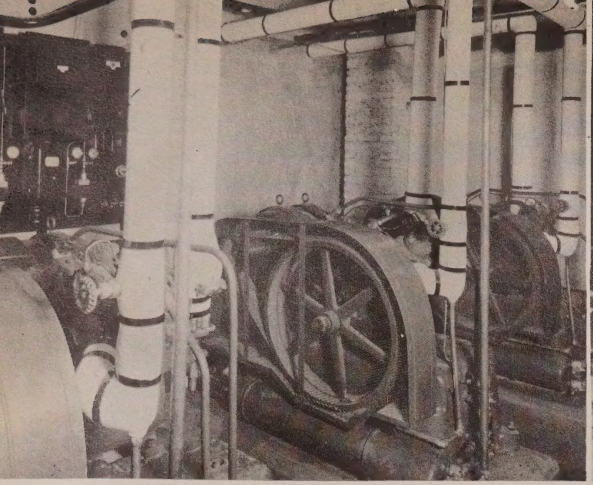
THEATRE COOLING

showing

MODERN AIR CONDITIONING INSTALLATIONS

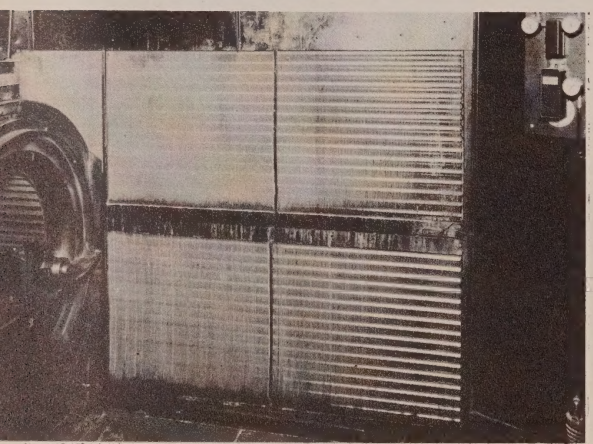
Below: **A CONTRAST BETWEEN THE NEW AND OLD** in Air Conditioning equipment is illustrated in these views from Balaban and Katz State-Lake Theatre, Chicago, Ill. Insert shows the 15 year old unit weighing 83 tons, requiring 250 horse power and occupying 1000 sq. ft. of floor space. The large view taken from the same spot shows four new Westinghouse condensing units weighing a total of 10 tons, requiring a total of 160 horsepower, occupying only 200 sq. ft. but doing a superior job. Installation by Kroeschell Engineering Company of Chicago.

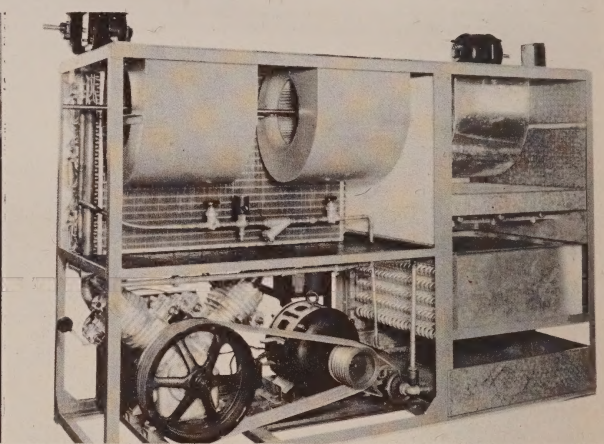


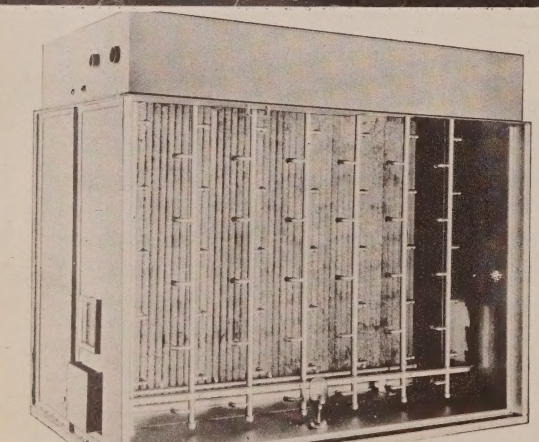


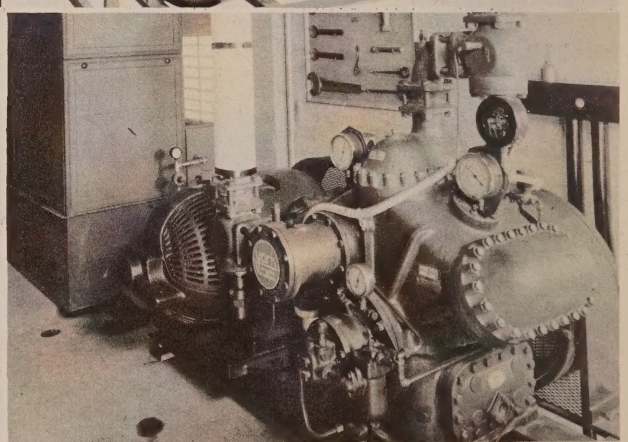
Above left: **THE COMPRESSOR ROOM** of Warner Brothers' Center Theatre, Philadelphia, Pa. showing a three unit system installed by Typhoon Air Conditioning Co. of New York. Arranged in sequence each unit takes its turn in assuming the starting load.

Above right: **TWO CONDENSERS** called "Aquamisers" are located in the rear of the State Theatre, Manchester, N. H., and are part of the Westinghouse Air Conditioning system installed in it.



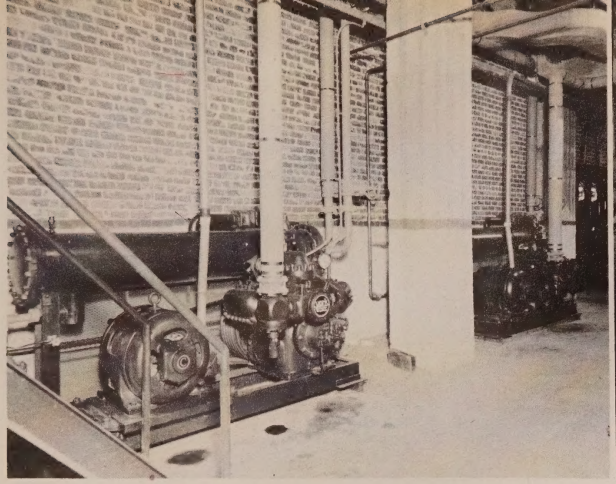


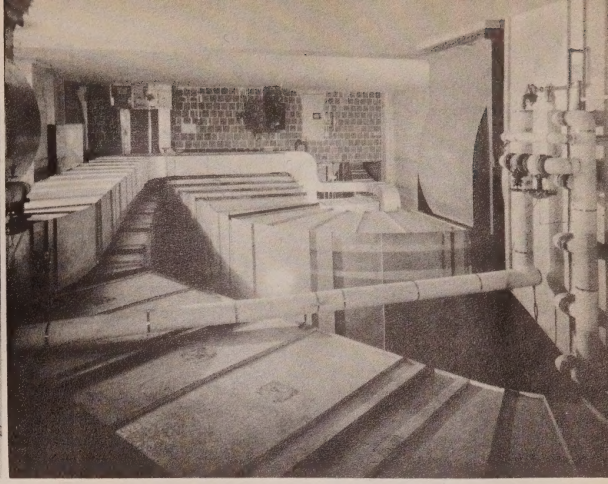




Above left: **THE COOLING SURFACE,** supply fan and automatic temperature and humidity control of a well water system installed by the Trane Company. (Right): **THE NEW 20 TON REFRIGERATING UNIT** complete with compressor, motor, coils, blower, and built in evaporative condenser as manufactured for theatre use by U. S. Conditioning Corp. It comes charged with Freon and ready to operate.

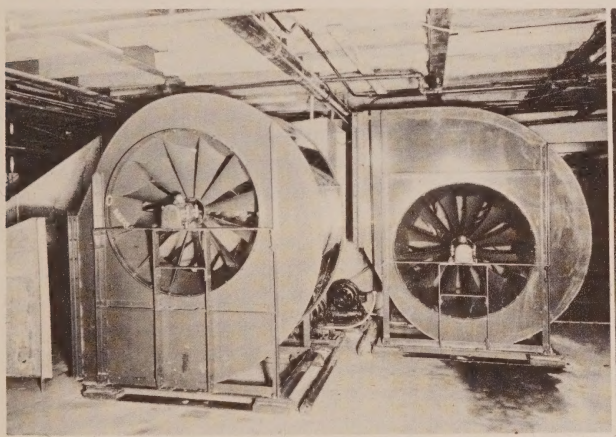
Below left: **AIR WASHERS** are the heart of most cooling systems. Handling from 2500 C.F.M. to 100,000 C.F.M. they are widely used for both evaporative cooling and cold water cooling. Illustrated here is an U. S. Air Conditioning air washer. (Right): a **COMPRESSOR UNIT** system installed by York Ice Machinery Corp. in the Tower Theatre, Fresno, Calif.

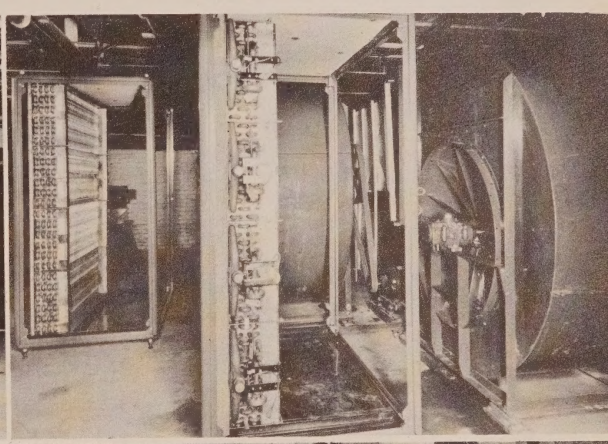


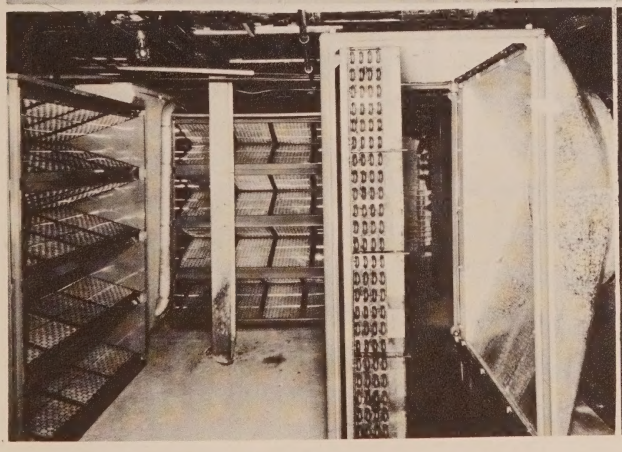


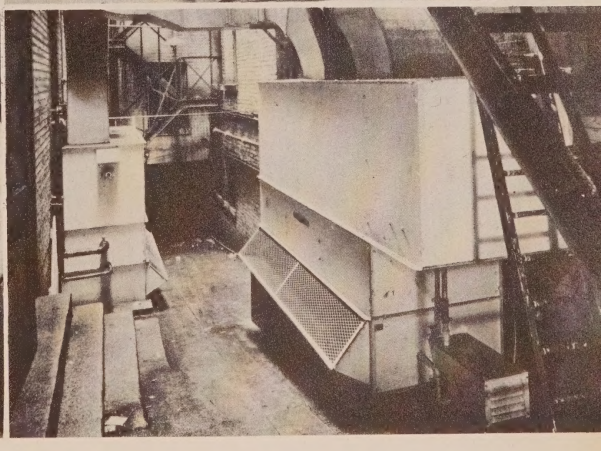
Above left: **TWO 50 HORSEPOWER** York Ice Machinery Corp. condensing units installed in the Orpheum Theatre, Phoenix, Ariz.

Above right: **PROPERLY CONSTRUCTED** and insulated ducts form an important part of any successful air conditioning installation. Illustrated are the connecting ducts in the Carrier System installed in the Paramount Theatre, Oakland, Calif.



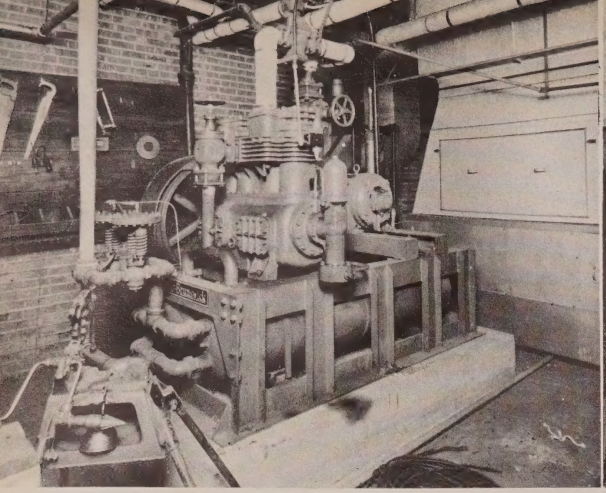


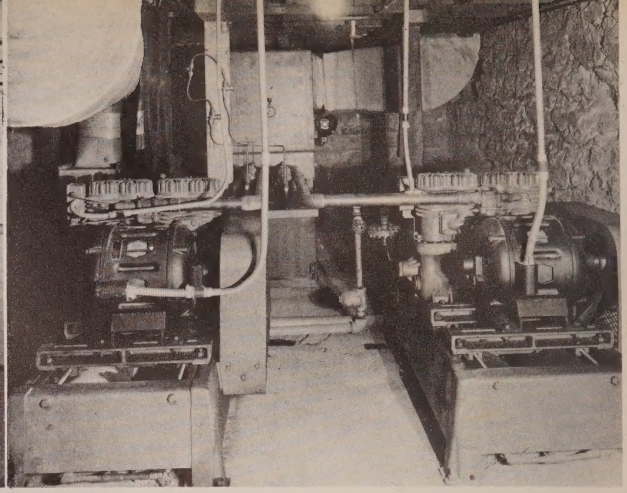




Above left: **FIRST STEP** in the installation of air conditioning equipment in Proctor's Theatre, Troy, N. Y. was the positioning of the two large centrifugal fans in the basement. (right): **SECOND STEP** the cooling coil sections were installed adjacent to the fans. Each of the two sections is made up of four direct expansion coils.

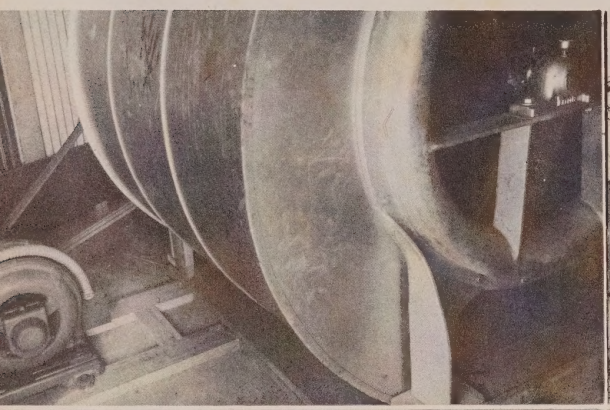
Below left: **THIRD STEP** was the connection of shrouds between fans and cooling coil sections. Filter sections at left are ready to be moved into place and bolted to coil sections. (right): **FOURTH STEP** two evaporating condensers were installed in an outside court in order to conserve water used by the system. This is all part of a General Electric Company installation.

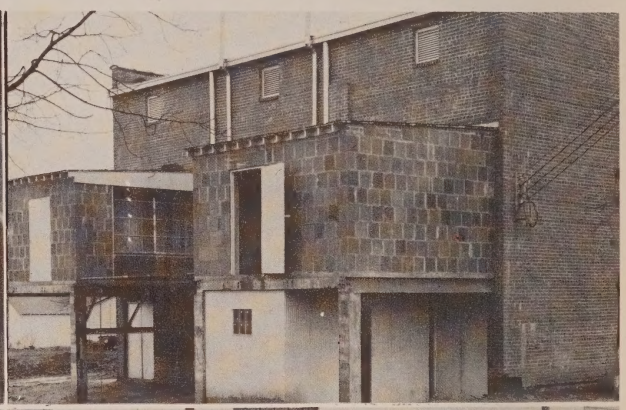




Above left: The Carrier Corporation refrigerating equipment in the center foreground and air conditioning equipment in the right background which serves the Fall Theatre at Cuyahoga Falls, Ohio.

Above right: The Carrier Corporation system used for refrigeration and air conditioning in the Helstrom Theatre, McPherson, Kan.





A TYPICAL SMALL INSTALLATION OF COMFORT COOLING is found in the Russell Theatre, East Point, Georgia. (Above, left): is one of two large blowers driven by 7½ horsepower Hertner motors and the activating power behind the air system. (Right): Fresh air is drawn from outside and forced through air washers fed from deep water wells. Each penthouse contains a washer and blower unit connected directly to (below, left) grilles and deflectors at either side of the proscenium which spray the cooled air over the auditorium. Such an installation eliminates expensive ducts. (Right): Even relatively modest small town or neighborhood theatres such as the Russell can afford such a system. The Atlanta branch of National Theatre Supply Co. designed and installed all equipment.

(*Continued from page 320*)

TOTAL CUBIC FT. PER MINUTE PER OCCUPANT	SUPPLY AIR TEMPERATURE	
	MINIMUM	MAXIMUM
35	68.6	71.6
30	67	70.6
25	64.8	69.1
20	61.5	66.9
15	56	63.2
10	45	55.8

The factors which determine the selection of the amount of air per occupant are first, cost, physical characteristics of the house, and utility rates.

Generally speaking, in a house without a balcony more air means more cost and frequently better results.

If the house has a balcony, there may be a considerable difference in the occupancy above and below; and the greater the amount of air handled, the less would be the variation in temperature between the occupied and unoccupied portions. If a small amount of air is used per occupant, separate control of temperatures under the balcony is frequently desirable, which, in itself, results in increased cost. In the use of small quantities of air, the air must be introduced through outlets that will provide a mixing effect in the room so that the air is well tempered before reaching the occupant. The physical shape of the building and location of beams frequently determines whether or not this method can be used. The location of fan and air cooling apparatus has considerable bearing on the cost of air handling. Frequently, an apparatus room directly above the entrance of the theatre is the most central point and results in the least expensive duct system.

The costs of power influences this problem in that the more air handled the less need there will be for mechanical refrigeration in the spring and fall, at which time additional fresh air may be used to accomplish the desired cooling effect. Depending on the local utility rate structure, this may or may not be of importance.

Uneven Results Due to Temperature Rise or Fall in Ducts

If an uninsulated duct runs thru the attic space, there will be a very noticeable rise or fall in the air temperature, depending on the attic conditions. In general, the less air handled per occupant the more noticeable this condition will be, tho even with large quantities the effect is very important. It is obvious that if the temperature of the air at the beginning and end of the duct changes as much as 6° or 8°, uniform distribution of air will not give uniform conditions in the theatre. In systems where the under balcony space is the farthest from the fan, this will frequently result in too little cooling in summer. Where the front orchestra supply is the end of the run, great difficulty may be encountered in winter heating. Insulation applied to the duct-work and, at times, to the under side of the roof, will correct difficulties of this type. Fortunately, these effects can be predicted by calculation.

Insulation of Ceiling

In some houses the heat gain through the roof is an important part of the load both in summer and winter and the cost of roof or ceiling insulation is frequently justified.

Supply Distribution

The most important point in the design of air distribution is that the supply air be uniformly distributed. Tho there are many methods of accomplishing these results, it is seldom wise to compromise with the distribution of supply air. Unless the air is distributed with reasonable uniformity, the theatre operator is faced with the problem of over-cooling one portion of the house in order to limit the temperature rise in another. This constant source of annoyance can seldom be justified by the difference in first cost between proper and improper air distribution.

In considering how far good design may be compromised, a distinction is warranted between the neighborhood and downtown house in a metropolitan area, as a deficiency in this portion of design may not become serious due to the relatively shorter occupancy of the neighborhood house. This comment applies with even greater emphasis with the adequacy of the refrigerating plant. Since the air distribution for summer cooling is customarily used for winter heating, the summer design air quantities should always be reconsidered in connection with the heating problem.

It is frequently found that if a first-class conditioning system is really desired, systems employing more than minimum air per person prove the most economical because of the possible elimination of separate air supplies for various areas, reduction in cost of automatic control, and the less exacting problem of supply air distributing equipment.

Fundamentally, a first-class system can be obtained with any quantity from the minimum up and the economically best air quantity is frequently determined by details of building construction and the size and complication of the house, maintenance problems, and operating cost.

Return Air System

The return air system presents a different problem in that uniform distribution is by no means a necessity. Where compromise for cost is to be made, this is the far safer place to do it. Obviously, it is not desirable to have people sitting close to a large grille and in the direct line of return. In general, returns from the back of the house are desirable, tho returns from the side walls, and at times even from the ceiling, can be satisfactorily designed. Mistakes in air distribution can seldom be corrected by the location of the return.

At the present stage of the art, there appears to be little reason for the installation of so-called mushroom return systems which, tho returning air uniformly, are difficult to keep clear and form objectionable obstructions in the aisles.

Large Theatres

In large metropolitan houses with foyers, mezzanines, and lounges where standing crowds are kept for an appreciable time, it is usually desirable and frequently justified that these various areas be carried on their own separate fan and duct system, even if they be combined as to cooling effect at a central point. With design of this type, the air per occupant may be varied in the different areas to satisfy the best design for each particular area.

Control

In general, constant air quantities are desirable and altho control can be effected by varying the volume of air supplied, controls which tend to keep volume constant and vary air temperature are more satisfactory.

Noise

For both the supply and return air system, the transmission of apparatus noise and noise originating in the sheet metal can be avoided. With substantial and careful sheet metal design, reasonably high air velocities can be used without generating objectionable noise, and apparatus noise can usually be avoided by the use of relatively small quantities of sound absorbing materials.

Selection of Outlets

For air distribution, high velocity or low velocity grilles, ceiling diffusion units, suspended plaques, high velocity jets, and in some cases, open ornamental grilles can be used to obtain satisfactory results. The selection of the particular method of air distribution depends very largely on the architectural and structural details of the house in question.

Control of Humidity and Freshness

In most summer air conditioning systems, the removal of heat and the removal of moisture are accomplished simultaneously and the apparatus must be so designed that this simultaneous result will be effected thruout all periods of operation. It is not sufficient to design only for peak operation as evidenced by many existing plants which perform satisfactorily under peak load but are difficult to control with partial occupancy. In general, the drying effect should be continuous and its capacity varied in accordance with the load. Where the refrigerating effect is intermittent, moisture removal is intermittent and excessive moisture may be brought into the theatre during the time the compressors are not operating altho the temperature may be satisfactory, and if the fresh air damper is closed to avoid this, there may be a serious deficiency of fresh air.

It should be noted, however, that the freshness of the theatre depends not only on the quantity of fresh air but also on the relative humidity, as previously noted, and on the type of conditioning apparatus since certain types are more effective than others in the removal of odors.

Operation of the Air System

Variable speed fans are seldom desirable. Once the air system has been properly balanced there is little reason and considerable objection to varying the total amount of air handled by the fans. The air system should be started sufficiently in advance of occupancy so that proper conditions are obtained before the patrons enter. The practice of starting and stopping fans as a means of control usually results in poorly maintained conditions in the theatre and the saving in operating costs is generally too small to be of importance.

*Authoritative data may be found in various publications of the American Society of Heating and Ventilating Engineers.

AIR CONDITIONING SYSTEMS

FROM the standpoint of the theatre operator the most important feature of air conditioning is cooling. Nothing will make people "stay away in droves" more than a hot stuffy theatre in mid-summer. Cooling has a real dollar and cents box office value and the theatre owner should carefully estimate this value in selecting the type of cooling system he is to install.

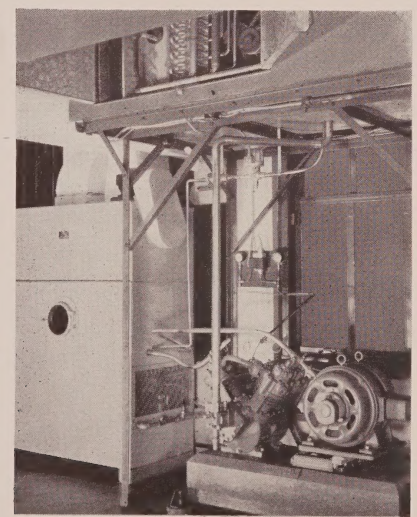
The various types of cooling systems in the order of their relative costs beginning with the least expensive follows:

BREEZAIRE

COOLING WITH A BREEZE. This type does not lower the air temperature at all but depends on the effect of rapid air motion to produce a cooling sensation. Air motion accelerates the evaporation of moisture on the skin and rapid removal of the heat thrown off by the body creates this sensation of coolness. An example of this kind of cooling is the effect of riding in an automobile. With the car in motion the occupants feel cooler although the temperature of the air is unchanged.

HYDRO-COOLING

EVAPORATIVE COOLING WITH SPRAY-TYPE COOLERS. In this system large volumes of outside air are forced through the spray chambers of air washers and then circulated through the theatre in much the same manner as in the Breezaire System. The evaporation of moisture in the air washer lowers the dry bulb temperature of the air and produces a lower effective temperature in the house. The extent of this cooling depends on the relative humidity of the outside air. In many sections of the country this system is very successful but it is not recommended in localities where the hot weather season is accompanied by long periods of high humidity.



A complete refrigerant cycle for a small theatre showing the compressor and evaporative condenser with cooling coils, blower and motor in the cabinet above.

ICEDAIRE

COOLING AND DE-HUMIDIFYING WITH ICE. Any desired temperature and humidity can be obtained with this system regardless of outside temperature. The air is cooled either in spray type coolers or with extended surface coils through which cold water is circulated. The water is cooled to the desired temperature by circulating over ice which is stored in an insulated chamber which may be located at any point for convenient filling with ice. Thermostatic control maintains uniform temperatures and prevents waste of ice. Operating costs per hour at peak load are higher than with other systems described hereafter but lower installation costs often make this system the cheapest in the long run. This is true of legitimate theatres or neighborhood houses which are fully occupied for only short periods or for houses in localities having a short season of hot weather.

DEEP WELL SYSTEM

WHEN adequate quantities of cold well water are available this is the cheapest method of obtaining positive cooling and de-humidifying. The water is circulated either through coils or air washers which cool and remove humidity from the air. Well water temperatures vary from 52° to 60° in various parts of the country and of course best results are obtained with the colder water. Relative humidities obtained with well systems are not quite as good as with other types and with high temperature water this is particularly true. However, as a practical matter of obtaining good hot weather comfort, higher humidities are not serious if the system is designed to circulate adequate quantities of air and if sufficient water is at hand to keep dry bulb temperatures down to slightly lower levels than is the usual practice.

Where water quantity is insufficient or the temperature too high, this system is often combined with an auxiliary "Icedaire" or mechanical refrigerating system.

MECHANICAL REFRIGERATING SYSTEM

COOLING WITH COMPRESSORS. In this system, as in the Icedaire System, perfect results may be attained at all times regardless of outside conditions. The first cost is higher than with any of the other types but if the theatre can expect a good volume of business the additional investment is justified. Most common practice is to cool the air with extended surface coils which in turn are cooled by the refrigerant expanded into them direct from the machine. In some cases water is cooled by the refrigerant and in that case the air is then cooled as in Icedaire or Well jobs, either in spray coolers or coils through which the cold water is circulated.

Condensers are required for this system and in some cases city water is employed for this duty although savings may be effected in some cases by using evaporative condensers or cooling towers.

Typhoon Engineers will analyze submitted plans or will recommend plans best suited to the requirements of the job, be it a complete Air Conditioning System or parts and equipment. Consult TYPHOON before you make a final decision.

TYPHOON AIR CONDITIONING CO., INC.

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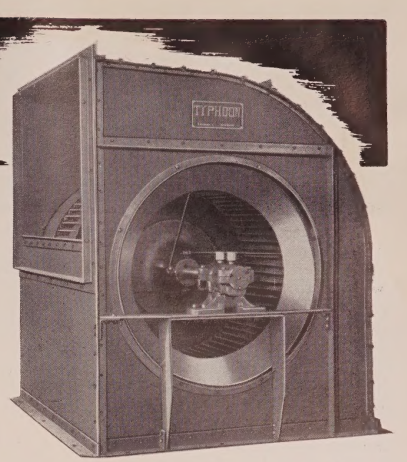
252 West 26th Street • • New York, N. Y.

AND EQUIPMENT



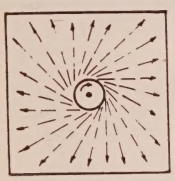
A strongly built Typhoon centrifugal blower. It employs a multi-vane wheel for silent, low speed operation.

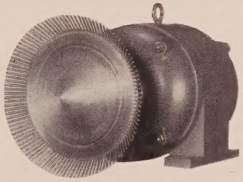
SIZES OF BLOWERS AND MOTORS REQUIRED FOR COOLING THEATRES OF VARIOUS SEATING CAPACITIES

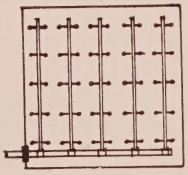
Blower Size	Dimensions of Blower Discharge	C.F.M. at 1,600 F.P.M. Outlet Velocity	H.P. Motor Recommended	THEATRE SIZE GRADED BY NUMBER OF SEATS FOR DIFFERENT TYPE SYSTEMS: "Breezaire" Cooling by Air Motion Only	"Hydro-Cool" Evap. Cooling, Air Washer, 60° Well Water	Deep Well Cooling 58° Water	Deep Well Cooling 56° Water	Deep Well Cooling 53° Water	50° Water, Icedaire or Compressors
				Seats	Seats	Seats	Seats	Seats	Seats
3	29" x18½"	5,700	1½	60	110	125	145	200	260
3½	34" x21⅜"	7,740	2	70	150	170	200	280	360
4	38¼"x24½"	10,120	3	120	200	240	290	400	500
4½	43¼"x27½"	12,820	5	160	240	320	400	540	660
5	48" x30⅝"	15,840	5	210	340	440	560	720	900
5½	53" x33¾"	19,200	5-7½	275	460	580	720	900	1,100
6	58" x36½"	22,800	7½	360	580	730	900	1,120	1,360
6½	64" x40⅛"	27,800	7½-10	460	750	930	1,130	1,400	1,700
7	70½"x44¼"	34,000	10	600	960	1,170	1,420	1,750	2,100
8	78" x49"	41,480	10-15	760	1,200	1,480	1,760	2,200	2,600
9	86" x54"	50,760	15-20	980	1,520	1,850	2,200	2,700	3,250
10	95" x60"	62,000	20-25	1,200	1,900	2,300	2,740	3,360	4,000

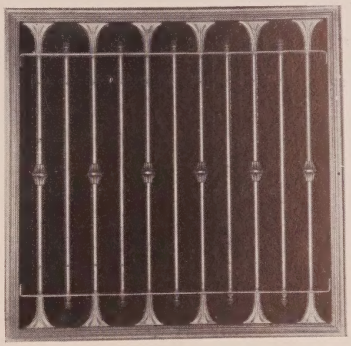
For deep well, Icedaire and compressor jobs the quantity of air and corresponding size of fan required for various sizes of theatres is based on maintaining 80 degrees inside with 95 degrees outside. The inside relative humidity will vary from 50 to 55% attained with cold water up to 65 or 70% with 58 or 60 degrees water.

By using more air and with larger water volume a lower dry bulb temperature can be obtained to compensate for higher humidity.

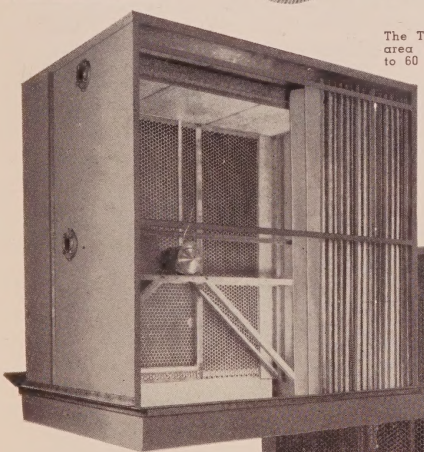








The Typhoon four-way deflecting grille insures even distribution of air since the horizontal and vertical deflectors are individually adjustable.



The Typhoon Atomizer completely covers an area that would ordinarily require from 40 to 60 pressure type nozzles. The one nozzle required is so large that it is almost impossible for it to become clogged. The small orifice in the pressure type nozzles, on the other hand, continually gives trouble on this score resulting in incomplete coverage of the spray chamber. Typhoon Air Washers always work at 100% efficiency. The motor of the Rotary Atomizer is completely water-proof.

The Typhoon Air Washers completely eliminate the use of pressure type nozzles and the difficulties that accompany their use. Instead of atomizing water by forcing it under high pressure through the small orifices of the pressure type nozzles which tend to clog, the Typhoon Air Washer uses high speed Rotary Atomizers which break up the water into a fine cloud-like mist. The revolving wheel of the Atomizer consists of stainless steel pins and the motor driving it is enclosed to make the unit water-proof and rust-proof. Less power is used to drive the Rotary Atomizer than is necessary to atomize water in pressure type nozzles.

Eliminators used in the washer are closely spaced and are provided with sufficient overlap and bends to completely prevent the carrythrough of entrained moisture. The Air Washer is also provided with Flooding Nozzles to keep eliminators continually flushed with a heavy film of water. This provides auxiliary cooling surface amounting to a second stage of cooling, in addition to helping in the cleaning and removal of dust from the air. These features make the Typhoon Air Washer extraordinarily efficient.

TYPHOON AIR CONDITIONING

Typhoon Air Conditioning Co., Inc.

252 West 26th Street • New York, N. Y.

Maintenance Tips on Your Equipment

Not what to buy . . . but whatever you've bought can be better understood and maintained after reading this practical advice.

BY BOB MILLS

WORLD-UNREST and intellectual upheaval, notwithstanding, the chances are pretty good that the following little drama will be enacted many times this summer:

A weary exhibitor will walk into his half-empty house, gaze dolefully at the unoccupied seats, wipe his damp forehead, and mutter sadly:

"Maybe I should have had the place air-conditioned after all."

The real point of interest in this play, however, is the fact that weary exhibitor No. 1 cannot see weary exhibitor No. 2, who has just walked into his half-empty house, gazed dolefully at the unoccupied seats, and muttered sadly:

"Maybe I shouldn't have had the place air-conditioned after all."

To air condition or not to air condition is a question that every exhibitor must answer for himself, according to the needs of his house. Air-conditioning is not a "cure all" and too often it has been discovered too late that the lack of a cooling plant was not the only thing that was keeping patrons out of a theatre.

However, with a full knowledge of the patronage and summer "opposition," should it be decided that the installation of air-conditioning will increase business to the desired extent, there are many factors to be taken into consideration before and after the purchase or installation of a system.

To bring to readers the experience of a man who should know, and does, the Better Management editors interviewed maintenance chief Bob Mills in the question and answer fashion. The results follow:

Which system is best?

"Unquestionably, from the standpoint of economy, the exhibitor who can draw his water from a well under the theatre is pretty lucky. However, the water must be cool enough and be of sufficient volume to be of use in the direct cooling. Well water can also be used in condensers, if any, and perhaps even in evaporative cooling on the roof. If the well is not adequate for all the needs of the system, it is a good idea to bolster it with mechanical refrigeration, which, although it may not be quite as economical, will present the best solution under the circumstances.

"Mechanical refrigeration used without the aid of well water is practical and probably the most common installation, though considerably more expensive than the well alone. The use of city water in the air-conditioning system for direct cooling is inadvisable, as it may be too warm for use; and, in addition, the supply needed is so large that it is likely to prove extremely costly. An icebox, though relatively inexpensive to install, will almost always lead to huge ice bills—although many engineers claim these bills are merely equal to what would have to be paid in interest, depreciation and operating cost if a mechanical refrigeration unit had been purchased.

What is the service expectancy of a modern refrigeration system?

"A modern refrigeration system, given good care, can be expected to last from eight to 12 years, with the accent on the first number. However, this statement is made with the understanding that the machinery is given periodic inspection and maintenance—with members of the house staff attending to periodic oiling, cleaning, and changing of the filters. In many cases, the system will have to be rebuilt at one time or another, in order that it may continue its work with its former efficiency. The weak link in the system to date is the condenser, as we have not had sufficiently long experience to know the reaction of freon on coils and piping.

Can the system be used for heating in the Winter?

"The air-conditioning system itself is the deciding factor in this question. The installation of steam coils in the cooling chamber will adapt the average air-conditioning system for heating in the auditorium proper, and in other areas covered by the cooling system. I have found the use of direct radiation in rest rooms, offices, etc., to be advantageous, as the auditorium is rapidly affected by body radiation, and frequently, as a result, the smaller areas become cold when not bolstered by direct radiation.

How should the system be prepared for cooling in the Spring?

"The work the air-conditioning machinery does in the Summer depends largely on the way it is readied for use. It should be lubricated thoroughly, all belts checked for wear and tension and all refrigerant pipes checked for leakage. The refrigerant charge should be distributed throughout the system and the water cycles filled and checked for leaks. The ducts should be thoroughly cleaned, especially if the system has not been used for Winter heating, as dirty ducts will send a storm of dirt into the theatre when the system is turned on. The compressor seals, or packing, should be looked over thoroughly for all possible leaks.

What steps should be taken to prepare the system for Winter hibernation?

"To prepare the system for the long idle period of Winter, it is advisable to cover the motors, and pump the refrigerant into one point in the system so that the danger of loss from leakage is minimized. Also, all pump casings and parts of the water system exposed to the elements should be drained to prevent freezing or cracking of the pipes or equipment. It is also a good idea to apply a coat of paint, and, of course, to be on the job constantly throughout the Winter keeping the parts of the system clean.

What economies may be used in installing and maintaining the system?

"Very often great economies can be accomplished in first cost by using the underground ducts or pipe tunnels existing in the building as part of the return system. Also, existing ventilating fan motors can be adapted for use on the mechanical system. Frequently, the electrical load added to the building by virtue of the cooling plant will be sufficient to cause the owner to install a transformer vault and purchase light and power at a greatly reduced cost throughout the entire year.

"In the icebox type of cooling plant there is one false economy to be avoided. During the afternoon performance, the operator may cool the theatre at the beginning of the show with ice, and then by-pass his water around the ice with the thought in mind of saving his ice for the evening. This always results in an increase in the relative humidity in the building, as moisture is added to the air as the water temperature rises. With this condition existing in the house, it doubles the job in the evening as the operator has to overcome both heat and moisture. The remedy is to shut off the water entirely and recirculate air only.

"A sensible method to follow in planning the installation of a system is that it is much more economical to design it for the normal hot days of a particular community, than to adjust it for a few 'dog days' or abnormal days that may come along during the summer. To plan for abnormal weather which occurs infrequently means considerable increase in first cost and is hardly worth its cost.

What is ventilation?

"Ventilation is the heart of refrigeration, although it does not cool or heat in itself. It refers to the proper movement and distribution of air in the area to be conditioned—in other words, keeping the air fresh. The common understanding of the word 'air-conditioning' is, in fact, false. Air-conditioning does not imply cooling alone, as is generally supposed, but year-round conditioning. In this case, it is definitely a misnomer.

Does the company or home office check on the systems once installed?

"The answer to this is yes—definitely. In addition to insuring the attention and care by the house staff of their equipment, home office engineers conduct periodic check-ups on every system

(*Continued on Page* 330)

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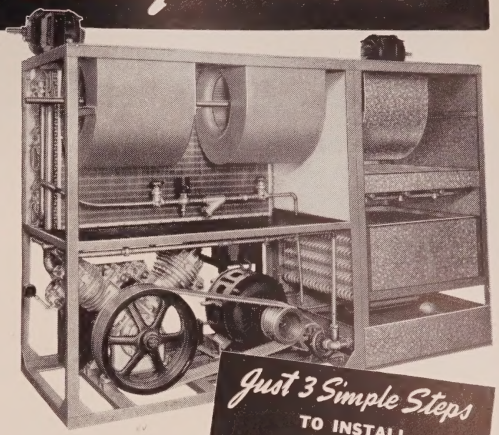

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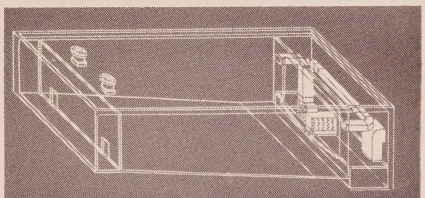

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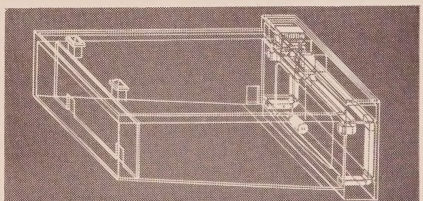

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Bob Mills has spent 13 years with Stanley-Warner, which represents the largest group of theatres in the Warner Brothers circuit. About 130 houses are included in the Philadelphia district and the fact that he has risen to be chief engineer in the area speaks for itself. In his post, Mills supervises construction, seating, installation of air conditioning, and many other important phases of theatre construction and maintenance. He is well qualified to write on this topic.

installed. In this way, the manager is guaranteed expert advice and repair service on his plant.

What are the latest developments in air-conditioning?

"Most interesting of the new developments in air-conditioning is the system of multiple compressors, whereby an exhibitor needing 150 tons for his house will buy three 50-ton machines instead of a single 150-ton unit. In this way, with a modulating thermostat, each machine is turned on as needed; instead of carrying the full load at all times regardless of conditions. A program switch rotates the order in which units cut in and out of the cycle thus cutting down on the amount of wear on any individual machine.

"The use of Freon as a refrigerant has proved itself a great development in recent years as it reduces working head pressure in the refrigeration cycle from the CO_2 pressures of approximately 1000 pounds per square inch to approximately 100 pounds per square inch. This greatly reduces cost of piping and also losses of refrigerant due to leakage at such high pressures.

Conclusions:

"It is extremely difficult to generalize about air-conditioning. Only the exhibitor himself can be the judge of whether or not it is necessary for his theatre. Having decided to install it, he must govern his selection of a system according to the available facilities and operating costs of his particular theatre.

"Will it bring in enough customers to his theatre to compensate for the cost of the installation and upkeep?

"Well, that's his problem, and I, or no one else but he, can answer it!"

A Discussion of Available Types

A survey of the various methods which have theatre application, their relative initial cost, and maintenance cost.

BY WILL A. WHITNEY

AT the outset, it should be emphasized that air conditioning is not merely the blowing of great quantities of cooled or chilled (sometimes even cold) air into a theatre auditorium—for that, basically, is nothing more than ventilation—rather it is the combined processes of taking air (usually from the outside), removing all foreign matter (such as dust, pollen, even noxious odors), taking out excess moisture, reducing the temperature, and finally turning that air, now thoroughly "conditioned," into the auditorium through outlets arranged and devised to insure the proper, even, scientific distribution in every part of the house.

The modern art of air conditioning is based on four factors which must be equally considered in order that any system may work in the most efficient and result-producing manner: temperature, moisture, air movement, and removal of stale air. Without specific attention to all four factors, no system, however scientifically contrived or expertly installed, can give the desired results.

It must be remembered that, in a cursory consideration, no specific, or even general, recommendations may be made with entire impunity, for every air conditioning problem is more or less a law unto itself, a task to which the engineer must bring to bear his full knowledge and experience.

COOLING BY MOVING AIR

Oldest of all methods in defeating the summer's heat is fans. From even before the Pharaohs, down to the present, man has kept the air in his immediate vicinity in circulation, thereby dispelling the accumulated mass of body heat and exuded moisture.

While moving the air in such cases is of exactly the same temperature as the air before it was agitated, the removal of the body heat, especially through the evaporation of moisture, creates the sensation of coolness. Accordingly, any change which the theatre operator may make to improve the quality and efficiency of his theatre's ventilation should react to the patron's greater comfort. However, it should be remembered that any series of ventilating fans must be expertly installed, so as not only to give the correct number of air changes to the hour, but also not to result in cold-producing drafts.

Of course, the reader realizes that this method, although satisfying one of the main factors, is not true air conditioning.

COOLING BY WATER

Simplest of the three major processes for cooling and conditioning air, with the assistance of some type of machinery, is the utilization of cold water.

Whether this method is adaptable to a deep water well is dependent on three principal factors: first, the temperature of the water supply; second, the volume available from the tapped source and, third, the depth of the source and cost of bringing it up. Unless the water temperature be 57 degrees (and preferably at 55 degrees, or even lower) and available at the rate of at least 100 gallons a minute, the supply is of little service in cooling the air of even a small theatre. When the water is at the right temperature and available in sufficient volume at not too great a depth, wells are the cheapest to operate and produce excellent results.

The technique is, briefly, to take the cool well water and pass the incoming air through a spray, or to pass the air around fin coils cooled by the water in tight compartments or pipes. The first method also removes a quantity of the impurities. If, however, the water should have an odor, as is sometimes the case, the second method must be employed. The water warmed by the absorption of heat from the air is returned to the ground or diverted to the sewer. The city water supply may, where the right temperatures and volume can be obtained, be used in a similar manner, but the cost of the required water may be prohibitive. It must be constantly remembered that the degree to which the air may be cooled is dependent on the temperature of the water available.

COOLING BY ICE

Where well water is not available for whatever reason, ice may be utilized, under certain circumstances, to good advantage. Water is taken from base of ice storage and sprayed over the ice, the resulting chilled water then being pumped through an air washer or through fin coils. After coolness is removed through the absorption of heat from the air, the water is then returned, and sprayed again over the ice, followed by a re-circulation. This system is of better advantage in relative small houses, although any theatre may be cooled by this method. One of the drawbacks to this method is the cost of the ice, yet, on the other hand, ice is purchased only when it is needed and one does not have

expensive machinery standing idle when the plant is not in operation. In modern, scientifically constructed ice storage chambers, there is very little loss from ice melting and ice economy can be obtained by controlled melting of ice.

COOLING BY MECHANICAL REFRIGERATION

The third method of cooling air—constant improvements are making it more efficient and lower in cost and maintenance—is the use of mechanical refrigeration not unlike (but, of course, on a larger scale) that employed in the ice-less iceboxes manufactured for home use. Here it is not water that is used as the refrigerant, but special materials, such as Freon or carbon dioxide, whose ability to absorb heat when changing from a liquid to a gaseous state make them particularly valuable in this service.

It matters not what gas is used, the principle is the same. The gas is pumped into pipes over which air is passing. As the liquid changes into a gas (through the release of the pressure required to keep it in its liquid state,) heat is absorbed from the air, leaving it, of course, cool. The gas is re-compressed, which drives off the heat earlier absorbed from the air.

DEHUMIDIFICATION

In the dehumidification (the removal of excess moisture from the air), the general method is to design the cooling apparatus, through which the air and water (or refrigerant) are passed to produce low temperatures, so that the excess moisture will be condensed out on the coils or baffle plates, in quite the same manner (and for the same reason) that "sweat" forms on a highball glass.

AIR MOVEMENT—IN AND OUT

Although cooling by means of air movement alone has been considered, this third essential factor in complete air conditioning —together with its twin brother, the removal of stale air, the fourth factor—should be re-emphasized, for it is perhaps on the efficiency of the intake and exhaust fans that the success of any installation may ultimately depend.

Air in motion, as has been pointed out, removes warm air and evaporates the perspiration from the body, thus producing a cooling sensation. Therefore, to maintain this effect, regardless of what supplementary methods of air cooling have been added to the system, it is obvious that there should be not only fans of sufficient power to keep the air coming into the theatre, but there should also be other fans to exhaust or return for reconditioning. If the owner has used discretion in selecting his ventilation and air conditioning engineer, he should have little worry on this score.

AIR PURIFICATION

Air would not be entirely "conditioned" if it were merely cooled and brought to a healthful degree of humidity, for it, however seemingly pure, carries dirt and other foreign matter, the removal of which becomes an important feature of air conditioning. Water again comes into play here, for one method of purifying the air, as suggested above, is to pass it through an air washer. Another method is to pass the air through a dry filter, of material such as mineral wool. In both these methods, the baffle plates and the mineral wool may be removed and cleaned, and used again.

NEED FOR CONTROL

While the human body detects major changes in climatic conditions (and air conditioning is certainly the creation of artificial climates), it cannot register those smaller fluctuations which the satisfactory operation of any air conditioning plant, especially in the larger houses, must, or should, eliminate.

Accordingly, it is important that all factors of air conditioning be automatically controlled, especially the temperature and humidity. When it is realized that the degree of water vapor in the air is conditioned by the temperature, the necessity for this automatic control is better appreciated. For example, air at 85 degrees, carrying a nominal amount of moisture would, at 70 degrees, with the same actual weight of water to the unit volume, become oppressively damp. Thus must the temperature be closely controlled by automatic devices, not only for the theatre proper, but also in the mechanism producing the artificial climate.

The exhibitor should at this point be warned that cheap control devices on temperature and humidity may entirely negate the benefits from the installation of expertly built and installed apparatus. While one cannot argue with the foregoing, in case of small installations, complete automatic control may not be monetarily possible. In such cases, there should be placed in strategic positions in the house, wet- and dry-bulb thermometers so that the operator, to control his system by hand, may keep in accurate touch with the actual conditions.

ADAPTATION TO WINTER USE

While these remarks have been made largely with the summer in mind, air conditioning is by no means restricted to that season. Indeed, in the winter air conditioning is fully as valuable an asset, although, perhaps, the patron be not as aware of it. With any installation by a reputable concern, the mechanism usually can be converted into a heating system and with installations in new houses, they are built with that end in mind. Practically the only change to be made, other than to provide for heat, is to install a humidifier, to add moisture to the air.

Three general methods of humidifying are practiced. The first is to pass the dry air through a spray of warm water; the second, to pass it over pans of warmed water; and the third, to pass the air over a series of screens continuously wetted by a spray of warm water. In each of these cases, the amount of water that the air picks up is dependent upon the temperature of the air and the water.

GENERAL REMARKS

Of the merits of the three types of air conditioning systems —that is, the well water, ice, and mechanical refrigeration types —little can be said without accurate information on the specific spot for the installation. They all have their particular conditions for especial service. It must be remembered, also, that elements of these three types of installations may be combined better to suit individual cases than would a single system alone. For example, well water and ice systems may be effectively combined While comparatively little machinery is required with the well water system, it must be kept in mind that the cost of sinking the well must be added to installation costs and considered as an item of upkeep and maintenance. Occasionally the cost of digging a well may be enough to throw the economic balance in favor of, for example, ice.

Then too, if water is struck, it may be too warm and not available in sufficient volume. Your engineer, conversant with the geologic formation of the territory, especially those bearing on a possible source of water, should be able to give you valuable advice on this angle. State and federal geologists can aid you, too.

It is estimated that the running costs with well water systems is about one-fifth that of a mechanical refrigeration system installed in the same situation. The ice method is convenient, and it can do everything that mechanical refrigeration can do. While the big users of ice are generally offered an attractive price, the financial may yet be the limiting factor.

While the past decade had seen almost unbelievable improvements in mechanical refrigeration—in the perfection of its machinery and in the reduction of operating costs—this method yet remains the most expensive of all. But there are situations where only this type of installation can be made, and it is completely automatic and almost foolproof. Therefore, the method deserves the earnest consideration of theatremen, particularly in theatres of continuous operation.

CONCLUSION

Regardless of the type of air conditioning system the theatre owner installs—and particular attention should again be directed to the point that each situation has its own peculiar requirements for the "best"—he should insist on having none but the most competent engineers and specialists he can afford. Indeed, he would be even well advised to secure the best available at whatever the cost, for a poorly installed or monetarily cheap apparatus can lead to nothing but unsatisfactory operation and, finally, more expense.

Every theatre owner should remember, too, that in this Year of Grace, 1941, theatres, no less than buildings for other purposes, bearing the banner "Cool, Healthful Comfort" (or words to that effect) have placed upon their uncooled opposition a handicap that super A pictures, double features, "flesh," low admission prices, etc., can not overcome. The theatreman should remember that in this day of rapidly advancing technical knowledge in every phase of air conditioning—advances which not only improves equipment, but lowers its prices and reduces the cost of operation and upkeep—there is an air-conditioning system, manufactured and installed by reputable companies, to meet all requirements. As a final word of caution—and this can not be overly emphasized—to all contemplating air conditioning: Do not let the GYPsy become manifest in air conditioning. The best you can buy is the cheapest you can afford.

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